Removal Action Work Plan

Avery Landing Site
Avery, Idaho

for
U.S. Environmental Protection Agency on Behalf of Potlatch Land and Lumber

March 4, 2013

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Draft Removal Action Work Plan

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Avery, Idaho

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1.0 INTRODUCTION

This document presents the Work Plan for the removal action to be completed by Potlatch Land and Lumber (Potlatch) at the Avery Landing Site (Site) in Avery, Idaho (Figure 1). The Site is a former railroad roundhouse and maintenance facility used by Chicago, Milwaukee, St. Paul, and Pacific Railroad and is located adjacent to the St. Joe River, approximately one mile west of the town of Avery, in Shoshone County, Idaho. The Site is formally referenced in the U.S. Environmental Agency (EPA) database as Avery Landing (EPA ID No. IDD984666313).

Based on the results of previous environmental investigations (URS, 1993; E&E, 2007; Golder, 2010 and GeoEngineers, 2011), diesel- and heavy oil-range petroleum hydrocarbons and Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) hazardous substances (including volatile organic compounds [VOCs], semi-volatile organic compounds [SVOCs], carcinogenic and non-carcinogenic polycyclic aromatic hydrocarbons [PAHs], polychlorinated biphenyls [PCBs], and metals) have been released to soil and groundwater at the Site. The migration of these contaminants in the subsurface soils at the Site has also resulted in ongoing releases to the adjacent surface water body, the St. Joe River.

In accordance with the Engineering Evaluation/Cost Analysis (EE/CA; E&E, 2010), the removal action will involve the removal of petroleum contaminated soil for off-Site landfill disposal, removal of existing petroleum recovery/containment systems, backfilling and re-grading of remedial excavations areas followed by restoration. General construction guidelines will be implemented to protect the community and workers throughout the duration of the removal action. Additionally, Best Management Practices (BMPs) will be implemented to control for potential short-term cleanup-related impacts to workers, the community, and the environment.

The primary objective of this Work Plan is to describe the general approach, conceptual design and assumptions for the removal action to mitigate the release of hazardous substances into the St. Joe River, and to protect human health and ecological receptors. Supporting documents to this Work Plan include a Quality Management Plan (QMP), Site Specific Sampling Plan (SSSP), Quality Assurance Project Plan (QAPP), Health and Safety Plan (HASP), Contingency Plan and Community Outreach Plan. These documents are presented in Appendix A through F, respectively.

2.0 BACKGROUND INFORMATION

2.1. Site Location and Land Use

The Site is located in the St. Joe River Valley of the Bitterroot Mountains in northern Idaho, approximately one mile west of the town of Avery in Shoshone County (Figure 1). The St. Joe River borders the Site to the south and Highway 50 borders the Site to the north. The Site is located within the northeast quarter of Section 16, Township 45 North, Range 5 East, and the northwest corner of Section 15, Township 45 North, Range 5 East.

The Site currently consists mainly of graded gravel yards and small amounts of vegetative growth over previously backfilled areas. The eastern portion of the Site currently contains a vacation cottage on the Bentcik Property. Land uses in the area around the Site are largely rural and

recreational. The St. Joe River is a recreational waterway. There are several areas of commercial land nearby, including a motel and recreational vehicle park located across the river from the Site.

2.2. Historical Operations and Site Use

Historically, the Site was used as a switching and maintenance facility for the Milwaukee Railroad from 1907 until 1977. The facility included a turntable, roundhouse, machine shop, fan house, engine house, boiler house, storehouses, coal dock, oil tanks, a pump house, 500,000-gallon diesel and fuel oil above ground storage tank (AST) and other aboveground structures. Facility operations included refueling locomotives, cleaning engine parts, and maintaining equipment. During the mid-1910s, Milwaukee Railroad began to operate electric locomotives which continued to the mid-1970s.

Milwaukee Railroad filed bankruptcy (presumably in the late 1970s) and then reorganized under the name CMC Real Estate Company (CMC). Under CMC, the properties were sold and otherwise divested. Potlatch leased portions of the Site from the Milwaukee Railroad from 1973 to 1980. In 1980, Potlatch acquired the western portion (Section 16) of the Site. The eastern portion (Section 15) of the Site reverted back to the family of the previous owner (before Milwaukee Railroad began operations) who sold the property to David Thierault. In 1996, Mr. Thierault sold this property to Mr. Larry Bentcik, who is the current property owner. The original railroad grade along the northern edge of the Site was acquired by the Federal Highway Administration (FHWA) for use in the construction and expansion of State Highway 50.

Historical railroad facilities on the eastern portion of the Site included an office, store house, oil pipes, and sand, coal, and oil storage. Many of the former Milwaukee Railroad facilities, including the turntable, roundhouse, engine house, machine shop, and cinder pit, were located on the western portion of the Site. The buildings and equipment associated with the former railroad maintenance facility were presumably demolished at some point after Milwaukee Railroad ceased operations. Presently, there is little remaining at the Site to indicate its previous use as a railroad switchyard and maintenance facility, with the exception of concrete slab and rail lines remnants.

2.3. Previous Investigations

Several environmental investigations have been performed at the Site since the late 1980s. In the late 1980s, the State of Idaho Division of Environmental Quality of the Idaho Department of Health (now Idaho Department of Environmental Quality [IDEQ]) began to investigate the Site. Investigations by the IDEQ included installation of several monitoring wells and test pits in the late 1980s and early 1990s. These investigations determined that free product was a mixture of diesel and heavy oil and was present at the water table throughout the Site, with product thicknesses exceeding four feet in some locations.

In 1992, URS Consultants, Inc., (URS) performed a site investigation at the Site on behalf of EPA to collected soil, groundwater, and surface water samples from the Site and surrounding area (URS, 1993). Analytical results indicated the presence of contaminants, including VOCs, SVOCs, metals, and PCBs.

In 2007, Ecology and Environment, Inc. (E&E) performed a removal assessment at the Site on behalf of EPA to investigate the discharges of petroleum to the St. Joe River and evaluate potential

releases of CERCLA hazardous substances and other environmental impacts related to historical Site use (E&E, 2007). During this study, evidence of petroleum hydrocarbons was observed in groundwater and subsurface soil throughout the Site. In addition, petroleum hydrocarbons were observed along an approximately 200-foot stretch of the Site's river bank. Subsurface soil and groundwater samples collected from the Site also contained several other CERCLA hazardous substances, including carcinogenic PAHs (cPAHs), PCBs and metals (arsenic, iron, lead, manganese and mercury).

In 2009, Golder Associates on behalf of Potlatch performed additional soil and groundwater investigations to further evaluate Site conditions and to support preparation of an EE/CA (Golder, 2010). A component of the Potlatch EE/CA investigation was a treatability study to evaluate soil washing as a potential treatment method for petroleum-contaminated soil.

Supplemental investigation activities were later performed by GeoEngineers on behalf of Potlatch in 2011 to further delineate two areas on the western portion of the Site where evidence of petroleum hydrocarbon product and/or sheen was observed during previous investigations (GeoEngineers, 2011). Test pit explorations and measurements of depth-to-product/groundwater were used to evaluate the presence of petroleum hydrocarbon contamination.

Detailed information regarding investigations completed prior to 2010 is presented in the EPA EE/CA (E&E, 2010). Detailed information regarding investigations completed after 2010 is presented in the Supplemental Site Investigation Report (GeoEngineers, 2011).

2.4. Regulatory History and Cleanup Actions

Pursuant to agreements with the Idaho Department of Environmental Quality (IDEQ), Potlatch installed and operated a free product recovery system (FPRS) from 1994-2000 to capture diesel and heavy oil discharging into the St. Joe River. The FPRS consisted of four subsurface extraction trenches and four extraction wells, an above ground storage tank (AST), and an infiltration trench. Recovered product was stored in the AST for off-Site disposal. During the system's operation, approximately 1,290 gallons of product (Farallon, 2006) were recovered from the Site. Despite operation of the FPRS, product continued to discharge to the St. Joe River. Under direction from the IDEQ, Potlatch completed additional remedial actions at the Site including installation of a product containment wall and extraction wells in 2000 to prevent product discharges to the St. Joe River. However, as a result of the continued presence of petroleum seeps and sheen in the St. Joe River, the IDEQ requested the assistance of EPA in 2006 to investigate the Site and the petroleum discharge to the St. Joe River.

In 2008, Potlatch entered into an Administrative Settlement Agreement and Order on Consent (ASAOC; CERCLA Docket No. 10-2008-0135) with EPA to complete an EE/CA, a Biological Assessment (BA) and a Cultural Resources Evaluation (CRE) for the Site. In 2010, the EPA completed the final EE/CA (E&E, 2010) for the site. Based on the final EE/CA, EPA prepared the Action Memorandum for the Site in 2011 (EPA, 2011),

During the summer/fall of 2012, EPA performed cleanup activities on the parts of the Site owned by Larry and Ethel Bentcik (Bentcik), the United States administered by the FHWA, the Idaho Department of Lands (IDL), and Potlatch to remove materials contaminated with petroleum

hydrocarbons and CERCLA hazardous substances from the Site. Contaminated materials were excavated from property owned by Potlatch and IDL to address a portion of the St. Joe River shoreline in which petroleum discharges were historically observed and to install stable side slope transitions between the Bentcik property and the FHWA property excavation areas and the Potlatch property.

In accordance with the recommended removal action alternative presented in the EE/CA dated December 2010 (E&E, 2010) and as described in the Action Memorandum for the Avery Landing Site (EPA, 2011), and agreements with EPA, Potlatch will perform removal actions followed by post-removal action groundwater monitoring to monitor natural attenuation of Site contaminants.

2.5. Nature and Extent of Contamination

Based on the results of previous environmental investigations and experience gained by EPA as part of the 2012 removal action, petroleum hydrocarbon contaminated soil at the Site could extend as deep as approximately 20 feet below ground surface (bgs). During EPA's 2012 removal action, multiple lenses of varying thickness of clean and contaminated soil were encountered to final depth of the excavation. In some instances, the contaminated lenses were encountered in soil as shallow as 2 feet (bgs).

The estimated horizontal extent of petroleum contaminated soil remaining at the Site following completion of EPA's 2012 removal action activities is shown on Figure 2. Detailed information regarding the nature and extent of contamination at the Site is presented in EPA's EE/CA (E&E, 2010) and Supplemental Investigation Report (GeoEngineers, 2011). The final extent of contamination to be excavated at the Site will be determined in the field based on field screening results and consultation with EPA.

2.6. Sensitive Species and Environment

A biological assessment was completed for the Site in 2011 (E&E, 2011). The results of this assessment identified the Canada lynx (*Lynx Canadensis*) and the bull trout (*Salvelinus confluentus*) as two threatened and or endangered species that may be present at the Site. Based on the conclusions of the biological assessment, the planned removal action for the Site will have ***no effect*** on Canada lynx and ***may affect but is not likely to adversely affect*** bull trout. In addition, the biological assessment concluded that the implementation of best management practices (BMPs) and conservation measures would limit the potential adverse effects of the removal action on these species. Recommended measures to avoid or minimize impacts on these species include:

- BMPs and temporary erosion and sedimentation controls (such as silt fencing, straw bales, and sediment ponds) for minimizing the potential direct and indirect adverse effects of short-term construction activities such as erosion, dust, noise, and sedimentation;
- Conducting shoreline excavation and reconstruction activities during the late summer/early fall authorized in-water work window to minimize potential negative impacts on the aquatic environment; and
- Planting of native trees and shrubs within the riparian zone for improving existing aquatic habitat along the St. Joe River.

2.7. Cultural Resources

In May 2012, Applied Archeological Research, Inc. (AAR) conducted a cultural resources survey at the Site on behalf of EPA in response to recommendations provided by the Idaho State Historic Preservation Office in their Class I Inventory Literature Review letter dated April 21, 2011 (ISHS, 2011). During the cultural resources survey, AAR identified four architectural features and three scatters of historical or likely historical artifacts and/or demolition debris at the ground surface on the Potlatch Property (AAR, 2012). Architectural features include concrete foundations for a roundhouse bay stall, lead railroad tracks to the roundhouse bay, boiler house and turntable. Artifact scatters include brick debris and glass bottles with limited markings. Based on these findings, AAR recommended the following:

- A cultural resource monitor observe excavation activities in the vicinity of the four identified architectural features to ensure that the details of the layout, construction and engineering of these feature are documented; and
- Field personnel conducting the removal action be aware of the potential archeological artifacts at the Site.

Identified architectural features and artifact scatters are shown relative to the historical railroad facility layout on Figure 2.

3.0 REMOVAL ACTION REQUIREMENTS AND OBJECTIVES

In general, EPA's selected removal action requires the excavation of subsurface soil contaminated with petroleum hydrocarbons (diesel and heavy oil). Removal of this material is expected to significantly reduce or eliminate the source of contamination at the Site and to prevent the continued discharge of petroleum hydrocarbons and hazardous substances into the St. Joe River. The oil and hazardous substances are comingled and cannot be segregated. Residual contamination remaining at the Site is expected to attenuate by way of natural processes and the progress of the attenuation will be monitored over-time, following the completion of the removal action.

The objectives of the Potlatch Property removal action are to:

- Remove the remaining components of the product containment, collection, and extraction systems that were installed as part of the 1994 and 2000 removal actions;
- Remove soil exceeding field screening methods within the upland and river bank areas;
- Remove, treat, and/or manage petroleum product that is present as light Non-Aqueous Phase Liquids (LNAPL) on groundwater within the excavations;
- Dispose of waste streams in accordance with CERCLA's off-site rule requirements; and
- Restore portions of the Site affected by the removal action including, backfilling, compacting and grading the excavation, reconstructing the river bank and re-vegetating parts of the Site.

The conceptual design and preliminary approach for the removal action that will be performed by Potlatch is summarized in the following section (Section 4.0).

4.0 REMOVAL ACTION CONCEPTUAL DESIGN AND PRELIMINARY APPROACH

Based on the results of previous environmental investigations completed by Potlatch and others, the removal action is estimated to include excavation of approximately 44,000 in-place cubic yards (cy) of overburden soil overlying the contaminated soil and approximately 16,500 cy of contaminated soil. The remediation area is approximately 100,500 square feet (2.3 acres) in size. The actual quantities of excavated soil may be greater or less than these estimates based on the results of the field screening methods at the excavation limits (see Section 4.4). In general, overburden soil and material placed along the FHWA and Potlatch property, IDL and Potlatch, and Bentcik and Potlatch property boundaries during the 2012 EPA removal action (transition zone material) will be excavated and stockpiled for use as backfill to access the underlying contaminated soil. Excavation activities will be sequenced to reduce the potential recontamination of backfilled soils.

Site features, including the location of the Potlatch, Bentcik, IDL and FHWA properties and residual contamination area are shown on Figure 2. No Site work will be performed until this Work Plan has been approved by EPA. Additionally, no Site work will occur on the Bentcik property or the FHWA property without prior approval by EPA and the respective land owners.

4.1. Temporary Site Controls

Temporary controls will be utilized to control Site access, traffic, erosion/stormwater pollution, dust, noise and spills. The planned temporary Site controls for the removal action are shown on Figure 3.

4.1.1. Site Access Control

Temporary fencing (orange safety fencing or similar), barricades, signage and/or traffic control will be used, as necessary, to control access to the Site during both working and non-working hours. Prior to the start of work, the Potlatch contractor will be responsible for installing fencing and/or other means to restrict general public access to work areas (i.e., construction staging, soil staging pads and water treatment areas) at the Site. Signage will be posted around the perimeter of the Site, including the shoreline of the St. Joe River to discourage and prohibit unauthorized entry of persons to the work areas.

Vehicle access to the Site will be from Highway 50 at one of four available access points (Figure 3). Flaggers may be used to control vehicle traffic into and out of Site, as necessary to minimize disruptions to traffic on Highway 50. To the extent practical, all construction related equipment will be contained with the established work areas of the Site. Site access controls will be maintained throughout the duration of the project.

4.1.2. Erosion Control and Stormwater Pollution Prevention

Best management practices (BMPs) will be used throughout the removal action for control of erosion, stormwater, and fugitive dust, and to avoid adverse impacts on wildlife and their habitats. The BMPs to be implemented during this removal action are based on the Catalog of Stormwater Best Management Practices for Idaho Cities and Counties (IDEQ, 2005), the U.S. Army Corps of Engineers Nationwide Permit 38, and professional experience.

Erosion control measures to prevent stormwater pollution will include:

- Use of silt fencing, silt dikes, fabric filter fences, straw bales, interceptor swales, wattle and rock check dams, and/or similar BMPs to prevent sediment from entering the St. Joe River;
- Stabilizing Site access points using quarry spalls or other effective materials to minimize the tracking of sediment onto the Highway 50;
- Cleaning Highway 50 as necessary, to remove tracked out soil; and
- Securing and covering of stockpiled soil with soil berms and/or plastic sheeting to protect from wind, rain, and other disturbances, as conditions warrant.

4.1.3. Dust and Noise Control

Engineering controls will be used during construction to prevent the off-Site transport of airborne particulates/fugitive dust generated by the removal action. Controls will include wetting or covering exposed soil and stockpiles to prevent dust generation.

Construction noise will be generated by a variety of construction equipment, including truck engines, generators and other small engines, and earthmoving equipment. Construction noise will be generally limited to daylight hours between 7:00 AM and 6:00 PM, Monday through Saturday.

4.1.4. Spill Response

The Contingency Plan contained in Appendix E will be utilized to reduce the risk of spills and to establish an efficient response strategy. An emergency spill response and containment kit will be located at the Site to address spills. Spilled material and expended clean-up materials will be disposed of off-Site at an appropriate disposal facility.

Refueling or machinery maintenance operations will be conducted in a manner that will prevent releases to Site soils or the adjacent St. Joe River. Fuel hoses, fuel drums, oil or transfer valves and fittings, and any motorized equipment used during the project will be inspected daily for drips or leaks.

4.2. Construction Site Layout

As part of Site preparation, access roads, construction staging areas, water treatment areas, and temporary facilities will be constructed to support the removal action. Access roads and staging pads, if constructed, may require limited grading and placement of a geotextile and/or gravel on the graded surface. The actual locations of the temporary access roads, staging areas, equipment pads, temporary construction facilities (travel trailer, water treatment system, temporary utilities, etc.), and vehicle loading zones will be determined in the field prior to the start of the removal action. The temporary staging, water detention and facilities will be located in areas that are expected to not interfere with construction operations or vehicle traffic. The existing contaminated soil staging pads that were constructed by EPA for the Bentcik and FHWA property as part of the 2012 removal action will be used, to the extent they are needed, for the Potlatch removal action.

Upon completion of the removal action, areas used for construction staging, water detention, stockpiling and temporary facilities, including the contaminated soil staging pads constructed by

EPA will be restored (i.e., gravel and/or geotextile removed, grading, and seeding to prevent erosion). Additionally, the silt fencing left in-place by EPA for use by Potlatch will be removed.

4.2.1. Construction Staging Area

At present, a portion of the Potlatch property located west of the excavation areas is anticipated to be used for staging construction trailers, contractor vehicle parking and storage of supplies. The tentative location of the Construction Staging Area is shown relative to the Site on Figure 3. The actual location of the Construction Staging Area will be determined in the field during the contractor mobilization.

Temporary telephone, power and other infrastructure will be brought to the staging area and connected to the construction trailers. These services will also be made available for use by EPA who will supply their own trailer.

4.2.2. Contaminated Soil Staging Pads

The existing contaminated soils staging pads constructed by EPA will be used to the degree needed, for the temporary storage of soil generated from the removal action (Figure 3). The pads are lined with a minimum of 12-mil thick, reinforced polyethylene liner surrounded by an approximately 2-foot-tall earthen dike with 1:1 slopes. The surface within the soil staging pads are sloped (at an approximate 1 percent grade) toward collection sumps to remove excess water resulting from precipitation or soil dewatering. The contaminated soil staging pads have been constructed to stockpile approximately 9,000 cy of soil If used and during non-working hours (i.e., at night or on weekends), the staging pads will be covered and secured from wind, rain, and other disturbances. The contaminated soil staging pads will be maintained throughout the duration of the removal action for use as needed.

It is anticipated that the area of open excavation will be kept as small as possible to minimize the dewatering requirements. To meet this objective, the excavated overburden and transition zone material that passes the field screening criteria will be temporarily stockpiled adjacent to the excavation for use as backfill. The backfill material will be returned to the excavation once the field screening criteria have been met within the active excavation and the excavation has been advanced horizontally to a sufficient distance to allow for the placement of the backfill on the complying surface. A trench will be maintained between the backfilled area and active excavation to prevent cross-contamination.

If required by the landfill, contaminated soil generated by the removal action will be temporarily stockpiled on Site for characterization and waste acceptance. If additional testing is not required by the landfill, contaminated soil generated from the excavation will be transferred to the disposal facility without additional characterization. Landfill testing requirements will be verified by EPA prior to initiating disposal activities. Excavated material may however, be temporarily stockpiled on Site prior to transport regardless of the landfill testing requirements to manage materials throughput and trucking capacity. Off Site disposal of materials generated by the removal action is further discussed in Section 4.5

4.2.3. Water Treatment Area

The water treatment area will be located in the general vicinity of the excavation areas and will be used to temporarily store and treat water generated during the removal action prior to discharging to the St. Joe River or use on Site such as for dust control. The preliminary planned location of the water treatment area is shown on Figure 4. The actual location of the water treatment area will be determined in the field. Specific details of the water treatment system are further discussed in Section 4.6.

4.3. Site Preparation

4.3.1. Utility Locate and Services

Prior to start of Site work, local utility companies will be contacted to obtain service for the temporary on-Site facilities that will be utilized during implementation of the removal action (i.e., water-treatment facility, temporary construction trailers, etc.). In addition, utility locating agencies will be contacted in order to identify the utilities that exist at the Site in the vicinity of the work areas. Active utilities located within/adjacent to the excavation areas such as the existing community sewer line will require temporary or permanent relocation. Potlatch will meet with the respective utility owners prior to construction to develop a relocation plan. Upon completion of the removal action, all disturbed utilities will be returned to their original location or situated as agreed to with the utility owner.

4.3.2. Clearing and Grubbing

Vegetated areas that will be excavated will be cleared and grubbed as part of the removal action. Clearing will consist of the falling, trimming, and cutting of trees, brush and shrubs. Cleared vegetation either will be cut off flush with or below the original ground surface or removed entirely. Clearing and grubbing activities will be limited to only those areas requiring soil disturbance for performing remedial excavation or installation of temporary site controls and/or staging areas.

4.3.3. Well Decommissioning

Monitoring and product recovery wells located within the removal area will be decommissioned in accordance with applicable rules and regulations as part of the removal action. Appropriate measures will be taken to protect monitoring wells that identified in the field and are located outside of the excavation area.

Unless previously decommissioned by EPA, it is anticipated that existing monitoring wells GA-1, GA-4, EMW-03, EMW-04, EMW-05, 1024, 1025, 1030, 1031 and HC-1R, and product extraction wells EW-1 and CW-01 will require decommissioning prior to the start of work. Well decommission activities will be completed by a qualified, licensed driller. Documentation of the well decommissioning will be provided to the State of Idaho.

4.4. Soil Excavation

Soil excavation will be completed using commonly available excavation equipment and standard earth work methodology. Soil excavation activities, including the excavation extent and sequence, soil segregation and stockpiling, excavation dewatering, water treatment, and backfilling and compaction are described in the following sections.

4.4.1. Field Screening

The segregation of overburden, transition zone and contaminated materials during excavation and final extent of excavation will be based on field screening methods (i.e., presence of free-phase petroleum hydrocarbons, oil-stained soil, sheen exceeding the field screening criteria, or elevated organic vapor). If the field screening methods indicate the presence of petroleum contamination at the expected limit of excavation, the need for additional excavation will be evaluated. Excavation activities will extend laterally until field screening evidence of petroleum contamination is no longer observed. The final limits of excavation will be approved by EPA.

Details on the field screening methods, testing procedures and action levels are described in the SSSP and QAPP presented in Appendix B and C, respectively.

4.4.2. Excavation Extent and Sequence

It is anticipated that the excavation will generally start in the northeast portion of the Potlatch Property and progress to the southwest toward the St. Joe River to minimize the potential for recontamination of the backfill material. The river bank excavation will be implemented only during the authorized in-water work window (July 15 to September 1, 2013). The excavation plan to remove contaminated soil at the Site is shown on Figure 4 and in generalized cross-section on Figures 5 and 6.

In response to AARs cultural resource recommendations (see Section 2.7), field personnel conducting the removal action will be made aware of the potential archeological artifacts that may be present at the Site. It is anticipated that the specific archeological features identified by AAR will be "pre-cleared" prior to the start of the mass excavation at the Site. For the pre-clearing step, an archeological monitor will be present to document the layout, construction and engineering of the identified architectural features located within limits of excavation prior to removal. Identified architectural features are shown relative to the anticipated extent of excavation on Figure 4.

The contact between the overburden and underlying petroleum contaminated soil as well as the lateral extent of contaminated soil will be determined based on field screening (Section 4.4.1). Excavation activities will extend laterally until field screening evidence of petroleum contamination is no longer observed. Excavation activities will extend vertically until field screening evidence of petroleum contamination is no longer observed or to a depth of approximately two feet below the seasonal low groundwater level of 17 feet bgs. Excavation sidewalls will be maintained at an approximate 1.5:1 slope. If necessary, the excavation sidewalls will be laid back further to maintain a stable slope. The final limits of excavation will be determined by EPA.

Clean backfill soil placed within the transition zone between the FHWA and Potlatch, IDL and Potlatch, and Bentcik and Potlatch removal action areas by EPA (Figure 4) will require partial removal to access the full depth of contamination on the Potlatch property. The clean backfill will be removed and field screened to verify that this material has not been impacted by the residual petroleum contamination present on the Potlatch property since completion of the 2012 removal action by EPA. EPA utilized a white geotextile where the backfill material was placed on the contaminated soil within the Potlatch property transition. The geotextile will be used as a visual indicator of the backfill base.

Clean overburden and transition zone backfill material generated during the excavation will be temporarily stockpiled adjacent to the excavation for reuse to fill the excavated area. It is anticipated that backfilling activities will be conducted concurrently with excavation activities to minimize size of the open excavation area and dewatering demands. Limitations in the available area adjacent to the excavation may require that overburden and/or transition zone backfill soil be temporarily stockpiled away from the excavation such as the soil staging pads.

Depending on the amount of rock estimated to be present, the excavated material generated from the petroleum-contaminated layer may be screened to segregate out the rock for reuse as backfill. In general, material generated from the contaminated layer would be processed through a screening machine to remove contaminated soil from the rock. Screened rock for which cleaning is unsuccessful or impractical, would be transported form the Site for landfill disposal. At present, it is not known if rock screening will be proposed. The decision to pursue this option will be determined based on observation of the amount of potentially reusable rock within the completed excavations. If the rock volume is determined to be sufficient to make use of the rock screen cost effective, then the methods and procedures for screening the material will be proposed to EPA as an addendum to this Work Plan. Use of rock screens will not be employed until approved by EPA.

Based on historical records, reinforced concrete foundations from former railroad structures will likely be encountered during soil removal activities. If encountered, these foundations will be broken into manageable-sized pieces and stockpiled on Site. Similar to the approach used by EPA in 2012, concrete debris that does not exhibit evidence of contamination, or can be efficiently cleaned will be used as backfill. Petroleum contaminated concrete debris in which contaminated soil removal is unsuccessful or the level of contamination makes the soil removal impractical will be transported off site for landfill disposal.

In the event that Site conditions prohibit further excavation of contaminated materials (i.e., at the base of excavation) excavation activities will be halted. In such cases, a woven geotextile fabric will be placed at the excavation limit to serve as an environmental marker between the residual petroleum contamination and backfill.

Shoreline excavation activities will be limited to the in-water work period from July 15 to September 1, 2013 to minimize potential negative impacts on the aquatic environment. Further details on the shoreline excavation are presented in Section 4.4.7.

4.4.3. Excavation Dewatering

Dewatering activities will be completed as necessary to manage the groundwater level within the excavation area during removal activities. To minimize the need for dewatering, soil below the groundwater table will be removed during anticipated periods of low water in the St. Joe River (July to October). Further, to reduce the amount of dewatering, the area of open excavation will be minimized during construction.

Based on observed conditions during EPAs 2012 removal action, it is anticipated that a water treatment system capable of treating water at a rate of 300 gallons per minute (gpm) will be sufficient to support dewatering of the excavations. If present, free-phase petroleum hydrocarbons or oil sheen on the groundwater surface will be contained using oil sorbent booms or similar to

prevent recontamination of backfilled soil. To prevent contamination of the saturated zone below the petroleum contamination, the groundwater level within the excavation will not be lowered to an elevation below the smear zone.

The dewatering system will be installed to allow operation without interfering with other construction activities. Water removed from the excavation will require treatment by the temporary water treatment system prior to discharge to the St. Joe River or reuse for dust suppression or other on-site activities. BMPs will also be used to direct stormwater away from the excavation areas to minimize the volume of water requiring treatment.

4.4.4. Excavated Soil Stockpiling and Dewatering

Excavated overburden and transition zone material generated during the removal action which passes the field screening criteria will be stockpiled temporarily near the excavation area to minimize cross site transport and to make the material readily available for use as backfill.

Potlatch is currently working with Waste Management to obtain a landfill use authorization for disposal of excavated material from the removal action. The landfill use authorization will specify any stockpile sampling requirements for the excavated material disposal. If stockpile testing is required by the landfill prior to disposal, then the contaminated soil from the excavation will be temporarily stockpiled pending characterization and waste acceptance in accordance with the SSSP (see Appendix B). If stockpile testing is not required by the landfill, contaminated soil generated from the excavation will be transferred to the disposal facility without additional characterization. In this case, the soil may either be loaded directly to haul trucks or temporarily stockpiled on Site prior to transport to manage materials throughput and trucking capacity. Contaminated soil generated from the saturated zone will be temporality stockpiled on Site and allowed to dewater if necessary, such that visible evidence of dewatering from the stockpile is no longer observed. The contaminated soil will be transported off site after a representative soil samples obtained from the stockpile pass the Paint Filter Test[1] (EPA Method 9095). Liquids dewatering from the stockpile either will be collected and transferred to the water treatment system for processing or directed back into the excavation.

4.4.5. Backfill of Removal Area

Excavated overburden that meets the field screening criteria and clean transition area soil placed by EPA in 2012 will be put back into the completed areas of the excavation concurrent with the removal activities. A trench will be maintained between the active excavation and backfill to prevent cross-contamination. Clean water will be added to the backfill material if it is too dry for adequate compaction. Backfill will be placed in the excavations using 24-inch lifts or less and will be compacted with equipment suitable for the soil type with the goal of achieving 90 percent of the maximum relative density. Compaction monitoring and test methods are presented in the SSSP. If

[1] Field test that involves suspending a conical paint filter (mesh number 60 +/- 5 percent) filled with a representative, approximate 100 gram soil sample from a tripod or ring stand for five minutes (EPA, 2012). If any liquid drips from the filter, the material will be deemed to contain free liquids and will be allowed to further dewater until which time representative samples pass the paint filter test.

the backfill soil condition is not favorable to re-vegetation then the surface soils will be amended or a four-inch minimum layer of topsoil will be placed. No compaction is required for the final grade.

Clean backfill will be imported to the Site as needed to reconstruct the approximate pre-construction grades at the Site. The approximate final grades are shown on Figure 7. The source of the imported fill material will be determined as part of the construction mobilization. Potential sources of the imported fill material may include commercial quarries and/or other local sources (e.g., Potlatch, Shoshone County, or Forest Service). Prior to import, representative samples of the fill material will be collected and analyzed for chemical quality to verify that the material is clean. Density testing of the import material will be completed as necessary to manage compaction. Sampling and testing of the import fill material will be completed in general accordance with the SSSP.

4.4.6. Product Recovery and Containment Barrier System Removal

Existing monitoring wells and extraction wells installed as part of the 1994 product recovery system and 2000 containment barrier system will be decommissioned in accordance with applicable rules and regulations prior to the start of excavation. It is anticipated that the remnant components of these systems (i.e., polyvinyl chloride [PVC] pipes, monuments and geotextile fabric) will be removed during the excavation. Other components of the product recovery system were previously removed from the Site by EPA during the 2012 removal action.

The approximate location of the 1994 product recovery trench and 2000 containment barrier system as previously documented are shown relative to the Site on Figure 2.

4.4.7. Removal Activities Along the St. Joe River

As part of the removal action, portions of the shoreline are expected to be excavated and reconstructed in order to address petroleum contamination. The anticipated bank excavation area is shown on Figure 4 and is based on the extent of EPA's 2012 excavation, existing site soil sampling data, the location of the containment barrier system and the historically observed zone of petroleum discharges into the St. Joe River. The actual length of affected shoreline will not be known until the excavation is completed. Shoreline excavation activities will be conducted only during the allowable in-water work period from July 15 to September 1, 2013 to minimize potential negative impacts on the aquatic environment.

Removal activities along the St. Joe River will require the removal of the existing shoreline armoring (i.e., clean rip rap), base rock and/or geotextile to access overburden and underlying contaminated soil. Armoring removed from the shoreline will be evaluated for the presence of staining, sheen and/or free-phase product. Armor that exhibits field screening evidence of contamination will be segregated, cleaned and reused during reconstruction of the shoreline. If cleaning of the armor stone is unable to remove the contaminated material, the armor stone will be transported from the Site for permitted landfill disposal. Additional armor stone may be imported to the Site, as necessary to reconstruct the St. Joe River shoreline to resemble its approximate pre-construction configuration. Bank stabilization and restoration are further described in the Section 4.10.

During shoreline excavation activities, BMPs including but not limited to use of containment berms, silt curtains and/or oil sorbent booms will be used and maintained in order to prevent sediment

and/or contaminant discharge into the St. Joe River. Generally, the same practice used by EPA in their 2012 shoreline excavations will be utilized for the shoreline removal. By this method, a narrow berm of soil will be left in place at the river interface at the base of the slope to minimize infiltration of river water into the excavation.

The erosion and sediment practices implemented along the shoreline will comply with the general conditions established under the U.S. Army Corps of Engineers Nationwide Permit 38 to ensure compliance with State of Idaho water quality standards.

4.5. Off-Site Disposal and Recycling

4.5.1. Petroleum-Contaminated Soil

If required by the landfill, contaminated soil will be stockpiled on Site and sampled in accordance with the SSSP for disposal characterization. If the landfill determines that characterization of the contaminated soil is not required, contaminated soil generated during the removal action either will be directly loaded into trucks and transported from the Site for permitted landfill disposal or temporarily stockpiled on Site and allowed to dewater prior to transport to the landfill. Temporary stockpiles may be utilized to manage materials throughput and trucking capacity. Contaminated soil transferred from the Site for landfill disposal will be completed in accordance with applicable state and federal solid waste handling regulations.

4.5.2. Recovered Free Product

Free product that is recovered during the operation of the dewatering system will be transferred to 35 or 55-gallon drums and stored on Site until completion of removal excavation. Representative samples will be obtained and tested from this material as required to meet the acceptance criteria of the licensed disposal or recycling facility.

4.5.3. Hazardous Wastes, Construction Debris and Other Material

Based on sample results of previous environmental studies and sample results of stockpile testing completed for the Bentcik and FHWA Property removal actions, it is not anticipated that soil generated from the excavation will designate as a hazardous or dangerous waste. In the event that buried debris such as asbestos cement pipe, underground storage tanks (USTs), batteries, capacitors, transformers or similar are encountered, additional testing will be completed to evaluate whether contaminants exceed the criteria for hazardous or dangerous waste. Soil designated as a hazardous or dangerous waste will be segregated and stockpiled on Site pending treatment, waste profile authorization and/or off-Site disposal.

Debris such as large concrete pieces in which visual evidence of contamination is observed will be cleaned and used to backfill the excavation. Debris in which cleaning is unsuccessful or impractical will be transferred from the Site for permitted landfill disposal.

4.5.4. Recycled Materials

During the course of the FHWA and Bentcik Property removal actions, significant quantities of metal debris were encountered in subsurface soil. Similar to the management plan used by EPA, metal debris will be segregated to the extent practical and transferred to a recycle facility.

4.6. Water Treatment

Water generated from equipment and personnel cleaning, soil stockpile dewatering, dewatering of excavation areas or resulting from the accumulation of stormwater, will be treated prior to discharge into the St. Joe River or for on-Site use such as dust control. As described above, excavation activities will extend vertically until field screening evidence of petroleum contamination is no longer observed or to a depth of approximately two feet below the local groundwater table elevation of approximately 17 feet bgs.

The temporary water treatment system is designed to treat contaminants previously detected in groundwater at concentrations exceeding Idaho surface water quality criteria (Idaho Administrative Code [IAC] 58.01.02). System design, initial system startup testing and operational testing are described in the following sections (Sections 4.6.1 through 4.6.3).

4.6.1. System Design

The temporary water treatment system will collect, handle, containerize LNAPL, treat and discharge water generated during dewatering of excavated soil as well as rainfall runoff that accumulates in excavation or containment areas, water generated from equipment and personnel cleaning, and additional groundwater or surface water encountered or generated during removal activities. The preliminary system shown on Figure 8 has been designed to treat waste water to meet the surface water quality criteria specified in the Idaho Administrative Code (2011) at a rate of up to 300 gpm. Normal influent flow rates are expected to be less than the design maximum flow conditions based on review of the EPA's 2012 construction activities.

Temporary water treatment system components anticipated for the removal action are summarized in the following sections. In addition to the primary system components summarized below, temporary piping, flow meters, pumps, sampling ports and valves will also be used.

The temporary water treatment system will be constructed within the water treatment area. The anticipated location of the water treatment area is generally shown on Figure 3. The actual location of the system will be determined in the field prior to the start of the removal action. BMPs will be implemented to prevent the release of untreated wastewater to the St. Joe River (i.e., silt fencing, soil berms, piping and/or trenches will be used to direct water into the excavation areas).

4.6.1.1. OIL/WATER SEPARATOR

Waste water generated from the Site will be pumped to the treatment system where it will pass through an oil/water separator prior to transfer into pre-treatment settling tanks. The oil/water separator will be a gravity-type unit capable of removing gross free-phase product and will include collection chamber(s) for settable sludge/solids recovery. Recovered product will be stored in 55-gallon drums.

4.6.1.2. PRE-TREATMENT SETTLING TANK

Following oil/water separation, waste water will be pumped into the settling tanks with a minimum storage capacity of 100,000 gallons. Additional pre-treatment settling tank(s) will be added to the treatment system as necessary to manage waste water generated during construction. Two of these 20,000 gallon tanks may be isolated and used to hold treated effluent during the system startup testing phase.

4.6.1.3. ELECTRO-COAGULATION TREATMENT SYSTEM

An electro-coagulation (EC) treatment system will be employed to treat waste water for turbidity, suspended solids and metals. Waste water entering the EC treatment system is monitored for pH and conductivity. After passing through the treatment cells the now treated effluent is directed to Settling Tanks where precipitated & coagulated material can settle out.

All EC system processes will be controlled by the WaveIonics Automated Operator system. This system incorporates control and adjustment of all system processes to a single touch-screen user interface. The interface allows the operator to observe system performance and operations and ascertain if there are any elements that require operator attention. In standard operation, the system is set to run automatically and send system alerts to operators via phone.

4.6.1.1. POST-TREATMENT SETTLING TANK & FILTRATION

Following EC treatment, waste water will be pumped to post-treatment settling tank(s) prior to passing through a media filter to remove suspended particulates. The post-treatment settling tank(s) will have a minimum storage capacity of 40,000 gallons. Additional post-treatment settling tank(s) will be added to the treatment system as necessary to manage waste water generated during construction. A high-pressure media filtration system is used to remove any remaining suspended solids and heavy metals that have not settled out of the water column due to specific gravity or particle size.

4.6.1.2. WATER QUALITY DISCHARGE VALVE

Prior to the granular activated carbon treatment stage, all EC treated water will pass through the water quality discharge valve located in the EC treatment trailer. This valve measures turbidity and pH in real-time and only allows discharge of effluent water that meets user-defined criteria. Non-compliant water is automatically returned to the pre-treatment tanks for re-treatment via the integrated auto-actuated re-circulation valve.

4.6.1.3. GRANULAR ACTIVATED CARBON SYSTEM

A granular activated carbon (GAC) system will be employed to treat waste water for petroleum-related compounds. The GAC system will have a minimum of two carbon vessels operating in series. Water quality testing (see Section 4.6.3) will be conducted to evaluate water effluent of the primary vessel for breakthrough of constituents exceeding Idaho Administrative Code (2012) surface water quality criteria. Testing parameters and frequency are summarized in Section 4.6.2.

When test results indicate that the primary GAC vessel has become spent (i.e., breakthrough of constituents above permitted limits are detected), the primary carbon vessel will be replaced. At this time the secondary vessel will be moved to the primary position, and a new carbon vessel will be added in the secondary position. This sequence of changing out carbon vessels will ensure continuous treatment and eliminate the potential for contaminants passing through the treatment system.

4.6.2. System Startup Testing

Following installation of the initial water treatment system, water quality sampling activities will be conducted to evaluate the performance of the treatment system and ensure that effluent water generated is in compliance Idaho surface water standards (IAC 58.01.02).

At system startup, groundwater generated from the excavation will be pumped through the treatment system and tested. Initial test results will be used to confirm compliance with the water quality discharge criteria. If initial test results exceed the water quality discharge criteria, modifications to the water treatment system will be made as appropriate and follow up testing will be complete. No water will be discharged from the system until confirmation that the water quality discharge criteria presented in Table B-2 of the SSSP (Appendix B) has been achieved.

System startup sampling methods and procedures are presented in the SSSP and QAPP (Appendix B and C, respectively). In general, treated water generated during system startup will be batched and sampled in 10,000 gallon increments pending initial test results. If the test results indicate that the water is not suitable for discharge, the water will be recirculated through the treatment system, retreated and retested. If test results indicate that the water is suitable for discharge, the water will be released to the St. Joe River. In accordance with the SSSP, treated water samples for system startup testing will be obtained from influent and effluent sample locations and submitted for chemical analysis metals, SVOCs, PAHs, PCBs and diesel and heavy oil-range petroleum hydrocarbons.

The startup testing of the water treatment system shall consist of treating a minimum of 50,000 gallons (i.e., five batches of 10,000 gallons) of water collected from the Site. Batch sample results will be used to confirm that the treatment system is capable of meeting the discharge requirements. During this time, flow monitoring and pressure readings will be recorded from all of the gauges and flow meters in order to demonstrate that the system is operating properly. Adjustments will be made to the system as necessary in order to maintain a continuous flow rate while meeting the operating requirements for each system component. Following the successful treatment of 50,000 gallons, system startup testing will transition to operational testing as described in the following section.

4.6.3. Operational Testing

Operational testing of the water treatment system will be conducted in accordance with the SSSP once initial samples confirm that treated waste water meets the Idaho surface water quality discharge criteria. Operational water samples will be collected on a weekly basis during normal operation of the system to monitor the discharge concentrations. Operational samples will be obtained from the influent water after it has passed through the OWS, between the primary and secondary GAC vessel and from the discharge point. Influent and effluent samples will be submitted for chemical analysis of diesel and heavy oil-range petroleum hydrocarbons, SVOCs, PAHs, PCBs and metals. Water samples collected between the primary and secondary GAC vessels will only be submitted for chemical analysis of petroleum related compounds to monitor for contaminant breakthrough. If effluent water sample results exceed the system discharge requirements, the system will be shut down and adjustments made, as necessary, to meet the discharge requirements. Exceedances will be recorded and reported as required.

In addition to chemical analysis, effluent water will be measured in the field for settable solids, turbidity and evaluated for the presence of surface water sheen. Settable solids shall not exceed 1 milligram per liter per hour. Turbidity shall not exceed background levels by more than 5 NTUs when the background is 50 NTU or less; or a 10 percent increase in turbidity when the background

turbidity is more than 50 NTU. Effluent water exhibiting sheen (oil film with rainbow color) will not be discharged to the St. Joe River.

4.7. Site Sampling and Monitoring

Specific details of the sampling activities (i.e., sample locations, frequency, field and laboratory analysis, and rational) that will be conducted during the removal action are presented in the SSSP (Appendix B) and summarized in the following sections.

4.7.1. Soil Excavation

Soil excavation activities will be performed to remove overburden and contaminated soil identified by field screening methods (discussed in Section 4.4.1) from the Site as described in previous sections. At the final limits of excavation, sidewall and base soil samples will be obtained and submitted for chemical analysis at to identify the baseline concentrations for natural attenuation monitoring. Sidewall samples will be obtained at a frequency of one per 300 linear feet of excavation sidewall. Excavation sidewall samples will be obtained at the approximate vertical midpoint of the observed petroleum-contaminated soil layer. No sidewall samples will be collected from the transitions between the Potlatch Property and FHWA Property or Bentcik Property since the sidewall is comprised of clean backfill material placed by EPA. Base samples will be obtained on a grid pattern with grid cells measuring approximately 150 feet (along the plume length) by approximately 100 feet (along the plume width). The location and orientation grid pattern being used for this removal action is based EPA's 2012 removal action base sampling grid.

Samples will be collected directly from the soil surface or, depending on stability of the excavation and access to the selected sample location, may be collected from the bucket of the backhoe performing the excavation. Samples collected using a backhoe will be between the bucket teeth away from the metal surfaces. Samples will be placed in laboratory supplied containers, filled to minimize headspace and placed in a cooler with ice pending chemical analysis.

The approximate locations of base and sidewall samples based on the maximum expected limits of excavation are shown on Figure B-2 of the SSSP (Appendix B). The actual soil sample locations will be determined in the field based on the actual excavation limit.

4.7.2. Excavated Soil

During excavation, field screening methods (discussed in Section 4.4.1) will be used to determine the contact between the petroleum contaminated soil and overburden. A visual marker (i.e., white geotextile fabric) placed by EPA during the 2012 removal action marks the contact between the contaminated soil and transition zone material placed by EPA. Overburden and transition zone material will be temporarily stockpiled on Site for reuse as backfill.

If requested by the landfill, soil in which field screening methods indicates petroleum contamination will be stockpiled on Site and sampled at a frequency determined by the receiving landfill, and submitted for chemical analysis for disposal characterization. In addition, contaminated soil generated from the saturated zone of the excavation will be allowed to drain until a representative sample from the stockpile passes the PFLT (EPA Method 9095).

In the event that buried debris such as asbestos pipes, USTs, batteries, capacitors, transformers or similar are encountered, representative soil samples will be obtained to evaluate whether the material designates as a hazardous or dangerous waste. Any soil designated as a hazardous or dangerous waste will be segregated and stockpiled on Site pending treatment, waste profile authorization and/or off-Site disposal. Material designating as a hazardous or dangerous waste will be handled in accordance with applicable state and federal regulations.

4.7.3. Import Fill Material

Prior to the import of fill material from an off-site source, representative samples of the source material will be collected and submitted for chemical analysis of SVOCs, VOCs, PCBs, and RCRA metals as described in the SSSP. Additionally, representative samples of the source material will also be collected and tested to determine maximum dry density as necessary, using a modified proctor by ASTM D1557. Modified proctor test results will be used to evaluate compaction during backfill placement.

4.7.4. Treated Water

Water samples will be obtained from the water treatment system during initial system startup and operation. Water samples representative of the influent (pre-treatment) and effluent (post-treatment) will be analyzed for petroleum hydrocarbons, SVOCs, PCBs and metals in influent to evaluate performance of the treatment system and ensure that water being discharged to the St. Joe River meets the surface water discharge criteria (water quality discharge criteria are presented in Table B-2 of the SSSP).

Product recovered from the water treatment system will be sampled and tested as required for acceptance to a licensed disposal or recycling facility.

4.8. General Construction and "Green" Practices

BMPs will be employed throughout construction for control of erosion, stormwater, and fugitive dust, and to prevent adverse impacts on wildlife and their habitats. The BMPs to be implemented during the Potlatch Property removal action will be based on the Catalog of Stormwater Best Management Practices for Idaho Cities and Counties (IDEQ, 2005), the U.S. Army Corps of Engineers Nationwide Permit 38, and professional experience.

In addition to implementation of Site BMPs, the following "green" practices will also be employed:

- **Reuse and Recycle** – To the extent practical, Site materials used to construct the staging areas and contaminated soil staging pads (i.e., soil used to construct the 2-foot-tall earthen dikes) will be reused to backfill the excavation areas. Overburden soil, transition zone backfill and shoreline armor will be reused on the Site to minimize the quantity of additional materials needed to backfill and stabilize the Site. To the extent practical, larger rock will be separated from the contaminated soil and used for backfill. Vegetation (i.e., trees and bushes) will be used to the extent practical for stormwater bio-filtration and habitat restoration. Additionally, BMPs used for site controls (i.e., silt fencing, swales, stormwater piping, etc.) will be reused to the extent practical to reduce overall construction waste. Metal debris generated from the excavation will be transferred from the Site for recycling.

- **Stormwater Management** – BMPs will be used to slow stormwater runoff (i.e., erosion control) and divert water to infiltration areas or excavation areas to minimize the volume of waste water requiring treatment. Treated waste water will be used for dust control and equipment washing as appropriate to minimize the need for imported water to the Site. In addition, stormwater BMPs such as silt fencing may also serve as site controls (fencing) to prevent the entry of unauthorized personnel to the Site.
- **Reduction of Vehicle Emissions and Fuel Consumption** – Staging areas and soil stockpile locations will be positioned at the Site to reduce the distance that vehicles travel to reduce excess vehicle emissions (i.e., placement of backfill stockpiles adjacent to excavation areas and reuse of on-site materials). Opportunities will be explored to locate and identify local gravel sources for import material. Vehicles not in use will be shut off to reduce excess fuel consumption.

4.9. Site Monitoring and Inspections

Specific details of the monitoring activities (i.e., sample locations, frequency, field analysis, and rational) and Site inspections that will be conducted during the removal action are presented in the SSSP (Appendix B), Contingency Plan (Appendix E), respectively, and are summarized in the following sections.

4.9.1. General Construction BMPs

The contractor and field inspectors for Potlatch will be responsible for monitoring and inspection of site controls and BMPs to ensure the protection the community, workers, and the environment throughout the duration of the removal action. Site controls and BMPs will be inspected regularly to ensure proper function. Site controls and BMPs will be modified as appropriate to meet the project objects.

4.9.2. Air

Perimeter air quality will be monitored regularly during construction activities to assess the impact of Site work on the community, workers, and the surrounding environment. Real-time monitors will be utilized to measure particulate matter (particles less than 10 microns) in the air. The real-time monitors will be utilized at upwind (background) and downwind locations of Site activity to determine and record perimeter background and impacted conditions. Engineering controls will be used during construction (e.g., wetting or covering exposed soil and stockpiles), as necessary, to prevent the off-site transport of airborne particulates.

4.9.3. Surface Water Quality

Surface water quality will be monitored regularly during construction activities at upstream and downstream locations as generally shown on Figure B-2 of the SSSP to assess the impact of Site work on the St. Joe River. The proposed upstream location has been selected to assess background conditions. The proposed downstream location has been selected to be downgradient of the planned excavation areas and waste water treatment discharge point. The following parameters will be measured on a weekly basis during excavation and/or active waste water discharge and on a daily basis during shoreline excavation activities:

- Acidity (pH);
- Electrical conductivity (EC);
- Dissolved oxygen (DO);
- Turbidity; and
- Temperature.

Monitoring will be conducted during construction to identify any water quality problems that may be occurring as a result of construction activities, and to demonstrate compliance with legal and other monitoring requirements, including the water quality criteria and/or targets for the project. Field parameters of pH and temperature will be measured using a Hanna Instruments combination meter or similar. Turbidity will be measured using a Lamont turbidimeter or similar. If a water quality problem is indicated from the monitoring results, appropriate actions will be implemented for identification and management of the problem.

4.10. Site Stabilization

Ground surfaces at the Site affected by the removal action will be restored using stockpiled overburden soil, or imported clean backfill to the approximate grade shown on Figure 7. The re-graded area, and other areas disturbed during construction, will be seeded.

Re-vegetation/restoration of these areas is described in the following sections.

4.10.1. Soil Disturbance Areas

Disturbed areas of the Site resulting from excavation, soil/equipment staging, and/or the installation of access roads will be re-vegetated with native grasses to minimize the potential for erosion. Native seed mixtures for the area consistent with U.S. Department of Agriculture (USDA) or other local agency-recommended (e.g., U.S. Forest Service) species will be used to stabilize Site soil. Seed mixtures will be applied using one or more of the following methods:

- Hydroseeder (option of combining seeding, tackifiers, and tracers);
- Blower equipment with adjustable disseminating device capable of maintaining a constant, measured rate of material discharge that will ensure an even distribution of seed at the rate specified;
- Power-drawn drilling equipment or seeders; and
- Manual seeding method.

Seed will be applied on firm soil with a roughened surface. Topsoil amendments will be used as needed to create favorable conditions for successful seed establishment. Areas compacted with vehicle traffic will be disked and/or roughened prior to seed application. If necessary, exposed areas steeper than 3H:1V will be stabilized with coir matting (or similar) to minimize erosion.

4.10.2. St. Joe River Shoreline

Reconstruction of the shoreline will occur after excavation activities are completed and will consist of replacing the shoreline slope, including rip rap to resemble the existing shoreline grade that was in place prior to removal and to match the adjacent sections of shoreline protection.

Following restoration of the shoreline, an approximately 15-foot wide riparian corridor from the top of the river bank slope will be re-vegetated with native plant species to minimize erosion, prevent water quality degradation, and restore overall environmental functions along the St. Joe River. Riparian enhancement may include planting native trees such as western larch (*Larix occidentalis*), black cottonwood (*Populus trichocarpa*), and Douglas fir (*Pseudotsuga menziesii*) and shrubs such as snowberry (*Symphoricarpos albus*), red-osier dogwood (*Cornus stolonifera*), and western serviceberry (*Amelachier alnifolia*). Willow whips (*Salix species*) will be inserted within the reconstructed river bank. Trees will be planted on approximately 15-foot centers, while shrubs will be planted on approximately 5-foot centers.

5.0 NATURAL ATTENUATION PERFORMANCE GROUNDWATER MONITORING

Following completion of the removal action, a Natural Attenuation Performance Groundwater Monitoring Plan to evaluate Site the post-construction condition of the Site will be prepared by Potlatch and submitted to EPA for approval. Included in this plan will be the location and number of groundwater monitoring wells, constituents of concern that will be evaluated and frequency and duration of monitoring. A draft version of this plan will be submitted to EPA for review and comment prior to finalization.

A report summarizing the results of groundwater monitoring will be prepared upon completion of the EPA-approved groundwater monitoring program and submitted to EPA for review and comment prior to finalization.

6.0 QUALITY ASSURANCE AND CONTROL

This section describes general quality assurance (QA) and quality control (QC) standards and procedures that will be implemented during the removal action, including quality management, contractor quality control, construction monitoring and field documentation, analytical QA/QC and health and safety.

6.1. Quality Management Plan

GeoEngineers' quality system is described in the Quality Management Plan (QMP) in Appendix A. The QMP described the quality systems used by GeoEngineers for planning, implementing, documenting, and assessing the effectiveness of activities to support environmental studies and obtain legally defendable environmental data.

6.2. Contractor Quality Control

The contractor will maintain QC records. These records will include evidence that the required inspections or tests have been performed, including the type and number of inspections or tests

involved; results of inspections or tests; nature of defects, deviations, causes for rejection, proposed corrective action, and corrective actions taken.

6.3. Construction Monitoring and Field Documentation

Construction monitoring will be performed by GeoEngineers and Potlatch. A comprehensive record of field activities will be maintained. Field documentation for this project will include field notes, field forms, field reports, and chain-of-custody forms for samples submitted for analytical testing. The field documentation will record construction, sampling, and monitoring activities, sampling personnel, and weather conditions, as well as decisions, corrective actions, and/or modifications to the project plans and procedures discussed in this Work Plan.

6.4. Analytical QA/QC

Analytical Quality Assurance/Quality Control (QA/QC) is described in the QAPP (Appendix C). The QAPP describes soil and groundwater sampling, analysis, and QC procedures that will be implemented to produce chemical and field data that are representative, valid, and accurate for use in evaluating the effectiveness of the removal action.

7.0 HEALTH AND SAFETY

Construction activities will be performed in accordance with the requirements of the Federal Occupational Safety and Health Act (29 CFR 1910, 1926). These regulations include requirements that workers are to be protected from exposure to contaminants.

A site Health and Safety Plan (HASP) describing actions that will be taken to protect the health and safety of GeoEngineers personnel is provided in Appendix D. The cleanup contractor for Potlatch will be required to prepare and submit a separate HASP for use by contractor personnel.

8.0 ROLES AND RESPONSIBILITIES

The removal action will be performed by Potlatch and their contractors under oversight by EPA. Specific details about the key participants and interactions with EPA are summarized below.

- **EPA –** Oversight of the removal action will be conducted by the Federal On-Scene Coordinator for EPA.
- **Potlatch –** The removal action will be managed by Potlatch.
- **Pacific Pile and Marine –** Cleanup contractor for Potlatch that will implement the removal action construction. Their primary responsibilities will be to mobilize the personnel, equipment, and supplies necessary to implement the removal action. In addition, Pacific Pile and Marine (PPM) will be responsible for the following:
  - Implementation of the removal action;
  - Improving/maintaining access roads;
  - Implantation and monitoring of BMPs; and
  - Spill prevention and control.

- **GeoEngineers, Inc. –** Environmental engineer for Potlatch for the removal action. Their primary responsibilities will be to provide on-Site technical assistance, engineering support and will be responsible for field-screening, collecting analytical samples, and documenting the removal action.

9.0 PUBLIC OUTREACH

A Community Outreach Plan, presented in Appendix F, has been prepared to facilitate local stakeholder awareness and two-way communication between the community surrounding the Avery Landing Site and Potlatch to ensure that residents are informed and provided opportunities to ask questions about the project.

10.0 PROJECT SCHEDULE

At this time, it is anticipated that the cleanup contractor for the Potlatch will mobilize to the Site in late May 2013 to begin implementation of Site and access controls prior to the start of excavation. During this period, BMPs will be installed, staging areas prepared, water treatment system established, and monitoring and/or extraction wells decommissioned. It is anticipated that removal activities will begin after the required controls are in place and will be completed by October 2013. The proposed schedule for the Avery Landing removal action is summarized in the following table. No Site work will be performed until the project Work Plan has been approved by EPA. Additionally, no Site work will occur on the Bentcik property or the FHWA property without prior approval by EPA and the respective land owners.

Note that the construction schedule will be updated as part of the finalization of this Work Plan following completion of contractor procurement activities that are currently underway.

Activity	Estimated Date
Contractor mobilization to the Site	Late May 2013
Installation of Site Controls are complete	Early June 2013
Removal activities begin	Early June 2013
Removal activities are completed	Late September 2013
Contractor demobilizes from the Site	Early October 2013

11.0 REPORTING

11.1. Removal Action Progress Reporting

Throughout the duration of the removal action, weekly reports will be prepared and submitted to EPA for review. The weekly reports will provide a summary of actions performed and/or completed, analytical data received and their results, planned actions for the subsequent reporting period and any issues or problems arising during the reporting period and their resolution or proposed resolution.

11.2. Removal Action Report

Upon completion of cleanup construction activities, a Removal Action Report summarizing the removal action activities will be completed by Potlatch. Waste manifests, contaminated soil disposal receipts, and as-built drawings will be included in the Removal Action Report. A draft version of the report will be submitted to EPA for review and comment prior to finalization.

12.0 LIMITATIONS

We have prepared this Removal Action Work Plan for use by the Potlatch during the removal action at the Avery Landing Site. Within the limitations of scope, schedule and budget, our services have been executed in accordance with generally accepted environmental science practices in this area at the time this report was prepared. No warranty or other conditions express or implied should be understood.

Any electronic form, facsimile or hard copy of the original document (email, text, table, and/or figure), if provided, and any attachments are only a copy of the original document. The original document is stored by GeoEngineers, Inc. and will serve as the official document of record.

13.0 REFERENCES

Applied Archeological Research, Inc. (AAR), "Results of a Cultural Resources Survey of the Avery Landing Rail Yard Project Area, Shoshone County, Idaho," prepared for Ecology and Environment, Inc., Seattle, Washington, dated July 20, 2012.

Ecology and Environment, Inc. (E& E), "Removal Assessment Report, Avery Landing Site, Avery, Idaho", prepared for the United States Environmental Protection Agency, Seattle, Washington, dated July 31, 2007.

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GeoEngineers, Inc., "Supplemental Site Investigation Report, Avery Landing Site, Avery, Idaho." prepared for Potlatch Forest Holdings, Inc., GEI File No. 2315-016-01, dated November 9, 2011.

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Idaho State Historical Society (ISHS), "Class I Inventory (Literature Review) of the Avery Landing Site and Project Area, Shoshone County, Idaho," Letter to Earl Liverman, Environmental Protection Agency Region X, dated April 21, 2011.

United States Environmental Protection Agency (EPA), "Action Memorandum for the Avery Landing Site Located Near Avery, Shoshone County, Idaho," memorandum to Daniel Opalski, Office of Environmental Cleanup, dated July 5, 2011.

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United States Environmental Protection Agency (EPA), Hazardous Waste Test Methods: Method 9095 Paint Filter Test, 2012. http://www.epa.gov/osw/hazard/testmethods/sw846/online/9_series.htm.

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N
W E
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10 0 10

Miles

Notes:
1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. can not guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.
3. It is unlawful to copy or reproduce all or any part thereof, whether for personal use or resale, without permission.

Data Sources: ESRI Data & Maps

Projection: NAD 1983 UTM Zone 11N

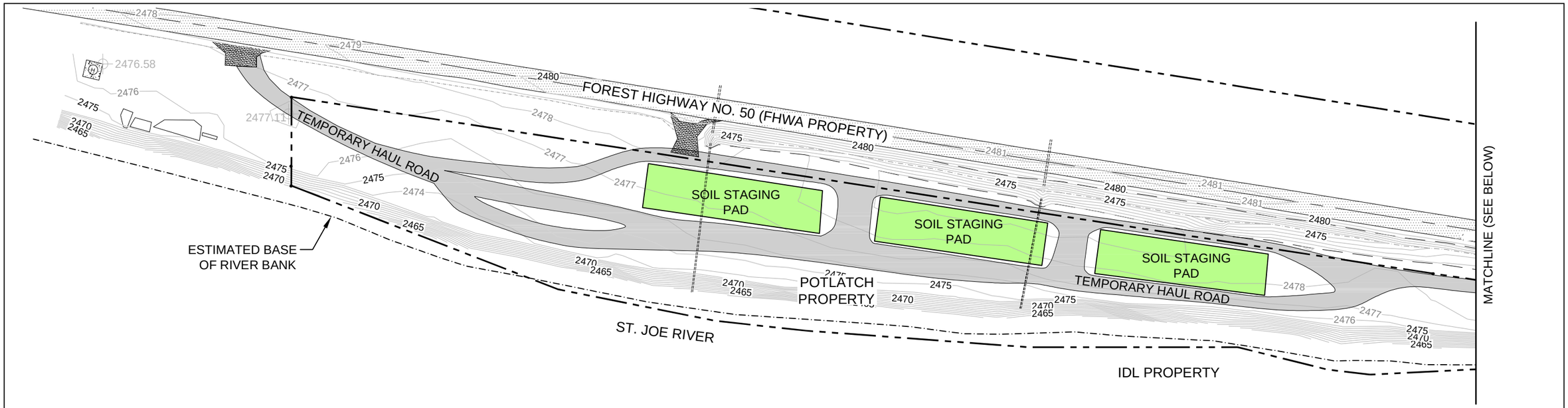
Vicinity Map

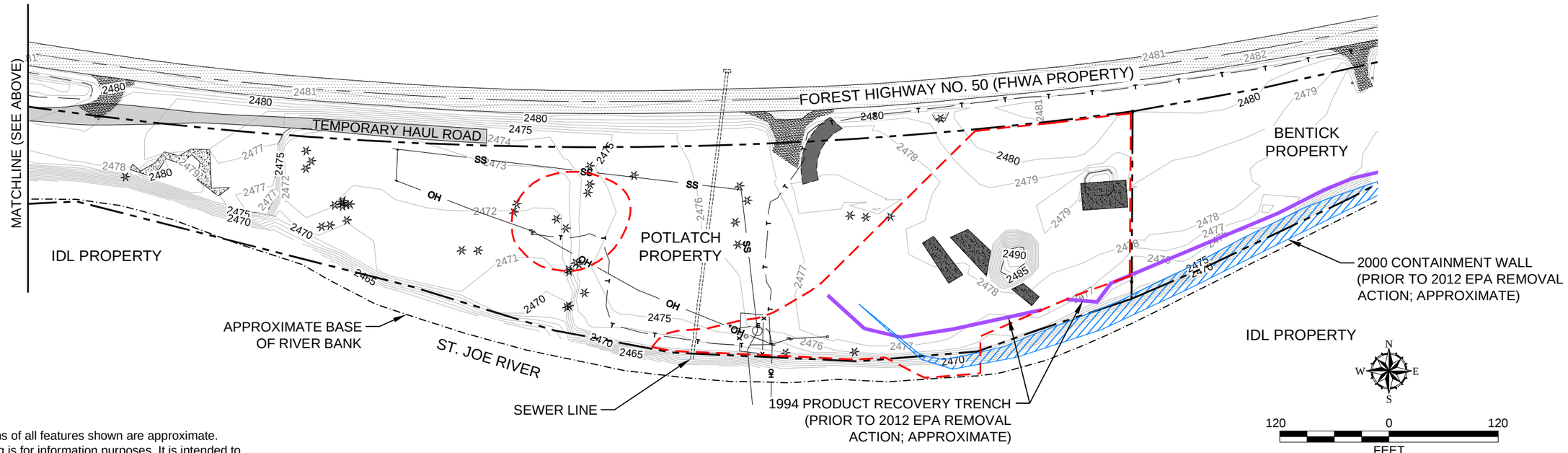
Avery Landing Site
Avery, Idaho

GeoEngineers

Figure 1

Path: \\sea\Projects\2\2315016\GIS\231501602_VicinityMap.mxd Map Revised: 14 December 2012 amanza





Notes

1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. cannot guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.

Reference: Existing topographic contours, property boundaries, site features including concrete, existing trees, and other miscellaneous features shown on this figure are based on Meckel Enginineering & Surveying survey file dated May 24, 2012 and September 25, 2012.

Legend

- Property Line
- 2480 — Existing Topographic Contour (Feet - NAVD 88)
- Estimated Extent of Petroleum Contamination
- Existing Trees
- Concrete Surfaces
- Architectural Feature (As Identifietd in a Cultural Resources Survey (AAR, 2012)
- IDL — Idaho Department of Lands
- FHWA — Federal Highway Administration

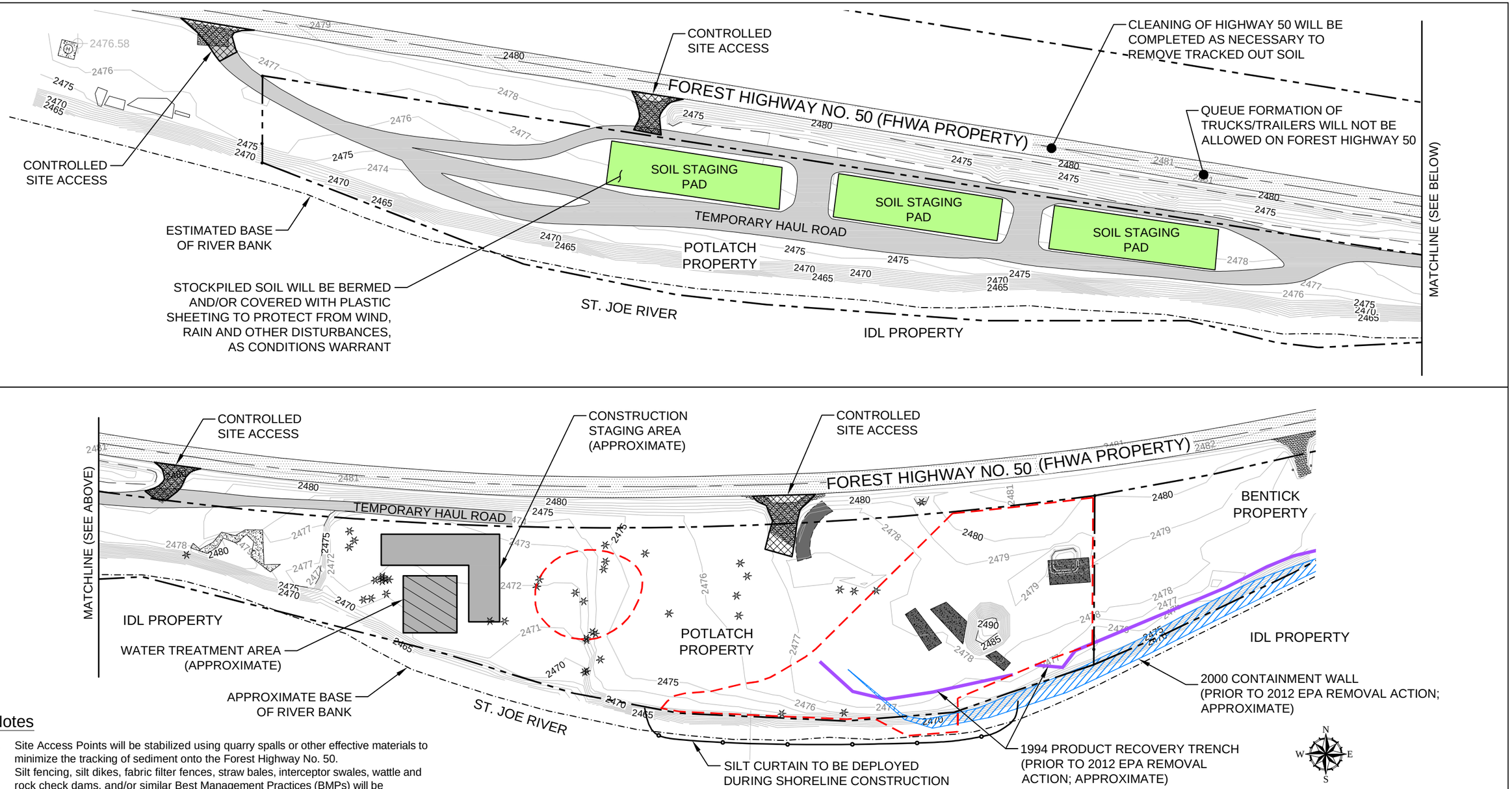
Current Site Conditions

Avery Landing Site
Avery, Idaho

GeoEngineers

Figure 2

P:\2\23150\02\CAD\Workplan Figures\23150-02 Fig 2 Site Plan.dwg\TAB:LANDSCAPE modified by tmichaud on Feb 27, 2013 - 15:19



Notes

1. Site Access Points will be stabilized using quarry spalls or other effective materials to minimize the tracking of sediment onto the Forest Highway No. 50.
2. Silt fencing, silt dikes, fabric filter fences, straw bales, interceptor swales, wattle and rock check dams, and/or similar Best Management Practices (BMPs) will be implemented to prevent sediment/sediment laden untreated wastewater from entering the St. Joe River.
3. Appropriate signage will be posted on Forest Highway No. 50 to alerts vehicular traffic of entering/exiting construction vehicles. Flaggers will be used as necessary to control vehicle into and out of the Site.
4. The locations of all features shown are approximate.
5. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. cannot guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.

Reference: Existing topographic contours, property boundaries, site features including concrete, existing trees, and other miscellaneous features shown on this figure are based on Meckel Engineering & Surveying survey file dated May 24, 2012 and September 25, 2012.

Legend

- Property Line
- 2480 — Existing Topographic Contour (Feet - NAVD 88)
- Estimated Extent of Petroleum Contamination
- Existing Trees
- Site Access Point (See Note 1)
- Concrete Surfaces
- Architectural Feature (As Identifietd in a Cultural Resources Survey (AAR, 2012)
- IDL — Idaho Department of Lands
- FHWA — Federal Highway Administration

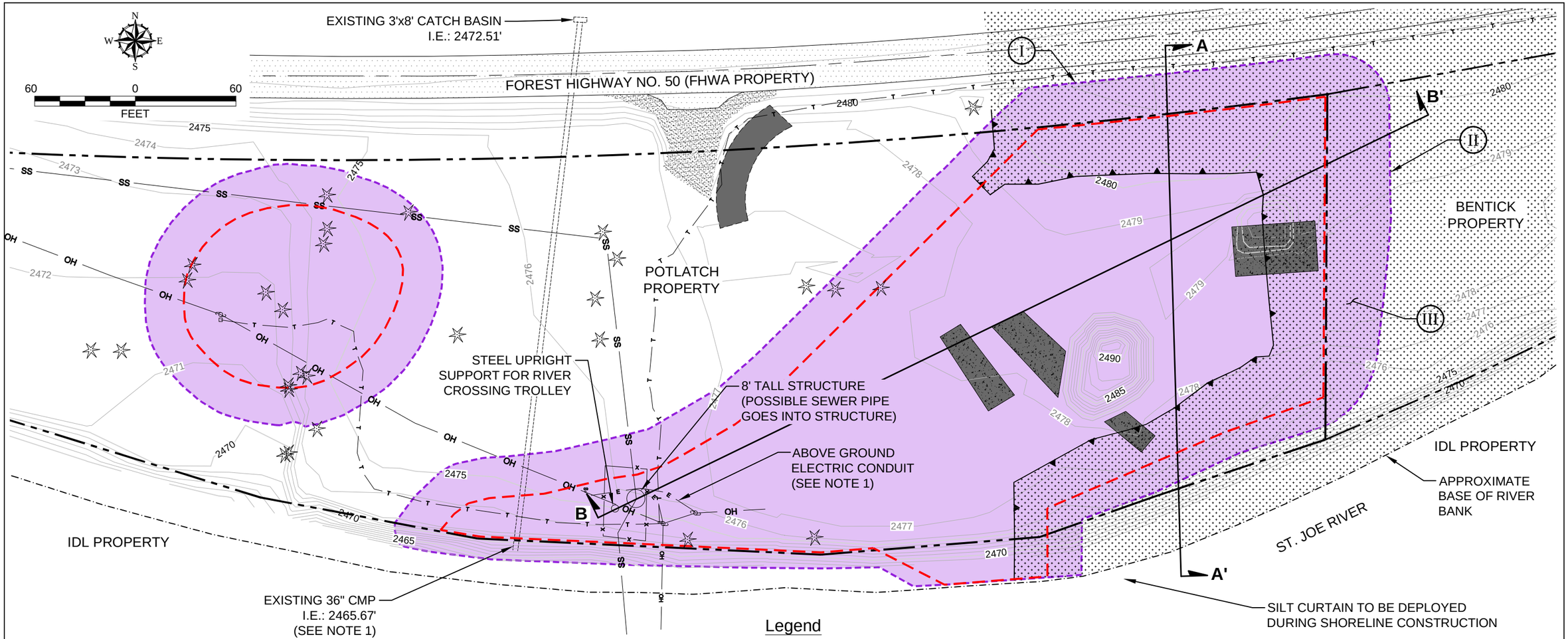
Temporary Site Controls

Avery Landing Site
Avery, Idaho

GeoEngineers

Figure 3

P:\2\23150\6\02\CAD\Workplan Figures\23150\6-02 Fig 3 Temporary Controls Plan.dwg\TAB:LANDSCAPE modified by thichaud on Feb 27, 2013 - 17:07



Notes

1. Active utilities located within/adjacent to the excavation areas such as the existing community sewer line will require temporary relocation. Upon completion of the removal action, all disturbed utilities will be returned to their original location or as agreed to by the utility owner.
2. Silt curtain will be deployed in the St. Joe River during remedial excavation activities along the Potlatch Property Shoreline.
3. Overburden Soil/Slope armor (Rip-Rap) will be removed as necessary to access contaminated soil.
4. An archeological monitor will be present to document the layout, construction and engineering of the identified architectural features located within limits of excavation prior to removal.
5. The locations of all features shown are approximate.
6. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. cannot guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.

Reference: Existing topographic contours, property boundaries, site features including concrete surfaces, existing trees, utilities and other miscellaneous features shown on this figure are based on Meckel Enginineering & Surveying survey file dated May 24, 2012 and September 25, 2012.

Legend

- Property Line
- 2480 — Existing Topographic Contour (Feet - NAVD 88)
- Maximum Expected Limits of Remedial Excavation (Top of Side Slope)
- Estimated Extent of Petroleum Contamination
- Top of slope for EPA's excavation completed within Potlatch property in 2012. (Based on Meckel Engineering & Surveying survey file dated 09/25/12)
- Silt Curtain (See Note 2)
- Backfill Soil Rip-Rap Placed during EPA's 2012 Removal Action/Restoration
- Concrete Surfaces
- IDL — Idaho Department of Lands
- FHWA — Federal Highway Administration
- Existing Trees
- Power Poles (See Note 1)
- x x x — Existing 6-Foot Tall Chain Link Fence (See Note 1)
- OH — Existing Overhead Power Line (See Note 1)
- SS — Approximate Path of Underground Sewer Line (See Note 1)
- T T — Underground Communication (See Note 1)
- Architectural Feature (As identified in a Cultural Resources Survey Report (AAR, 2012); See Note 4)
- A A' — Cross-Section Location

I. Excavation side slopes will extend within FHWA Property to access contaminated soil in the northern portion of the Potlatch Property. A minimum 10-foot off-set will be maintained between the excavation and Forest Highway No. 50.

II. Excavation side slopes will extend within Bentcik Property to access contaminated soil in the eastern portion of the Potlatch Property.

III. Excavate backfill/ rip-rap placed during EPA's 2012 Removal Action to access underlying contaminated soil.

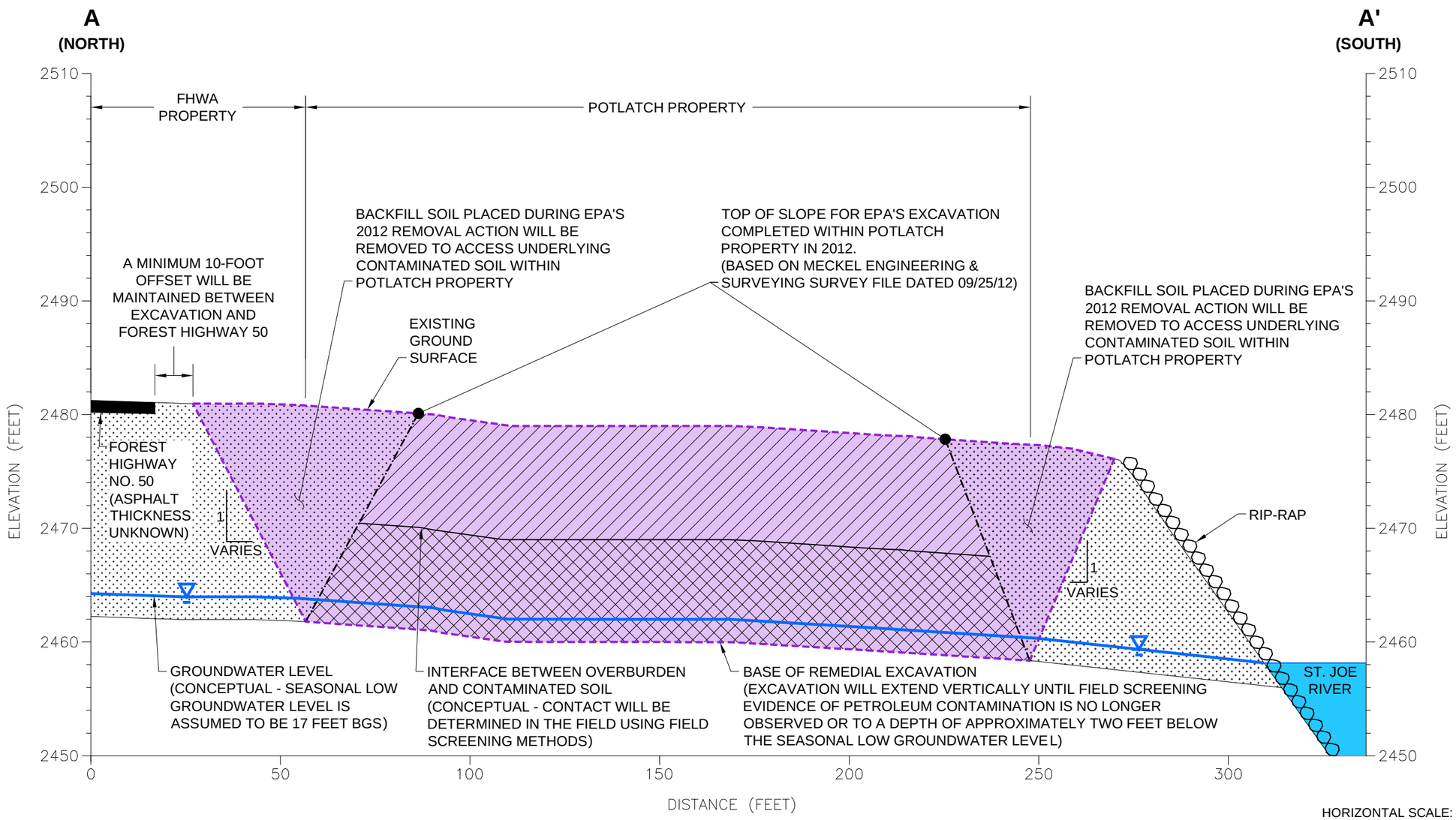
Removal Action Plan

Avery Landing Site
Avery, Idaho

GeoEngineers

Figure 4

P:\123I50I6\02\CAD\WorkPlan Figures\123I50I6-02 Fig 4 Removal Action Plan.dwg\TAB:LANDSCAPE modified by TMICHAUD on Feb 27, 2013 - 17:08



HORIZONTAL SCALE: 1"= 30'
VERTICAL SCALE: 1"= 10'
VERTICAL EXAGGERATION: 3X

30 0 30
FEET

Notes

1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. cannot guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.

Reference: Existing topography, property boundaries, and site features including asphalt surfaces shown on this Figure are based on Meckel Enginineering & Surveying survey file dated May 24, 2012 and September 25, 2012.

Legend

- Maximum Expected Limits of Remedial Excavation
- Excavation Side Slopes of EPA's 2012 Removal Action/ Restoration (Slope Assumed)
- Backfill Soil Placed during EPA's 2012 Removal Action
- Overburden Soil
- Contaminated Soil
- BGS — Below Ground Surface

Cross-Section A-A'

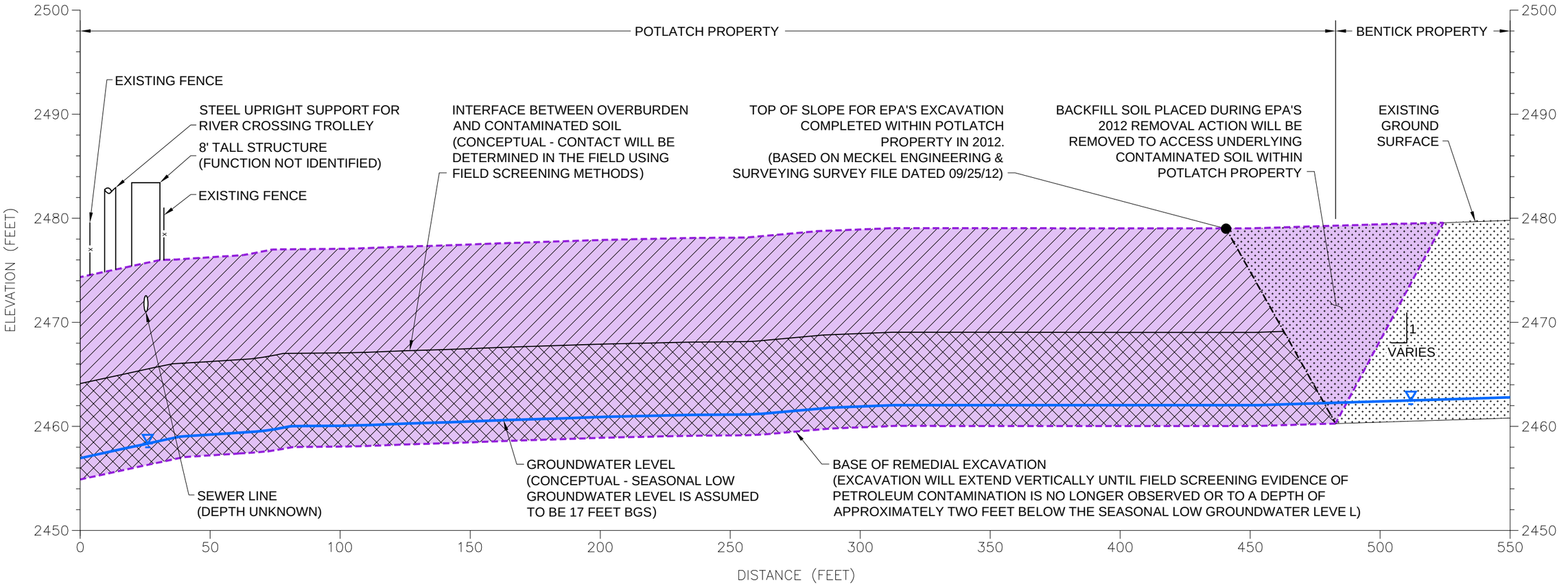
Avery Landing Site
Avery, Idaho

GeoEngineers

Figure 5

B
(SOUTHWEST)

B'
(NORTHEAST)



HORIZONTAL SCALE: 1"= 40'
VERTICAL SCALE: 1"= 10'
VERTICAL EXAGGERATION: 4X

40 0 40
FEET

Notes

1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. cannot guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.

Reference: Existing topography, property boundaries, and site features including asphalt and utilities shown on this Figure are based on Meckel Enginineering & Surveying survey file dated May 24, 2012 and September 25, 2012.

Legend

- Maximum Expected Limits of Remedial Excavation
- Excavation Side Slopes of EPA's 2012 Removal Action/ Restoration (Slope Assumed)
- Backfill Soil Placed during EPA's 2012 Removal Action
- Overburden Soil
- Contaminated Soil
- BGS — Below Ground Surface

Cross-Section B-B'

Avery Landing Site
Avery, Idaho

GeoEngineers

Figure 6

DISTURBED SURFACES WITHIN FHWA PROPERTY AND BENTICK PROPERTY WILL BE RESTORED TO RESEMBLE PRE-EXISTING GRADES

FOREST HIGHWAY NO. 50 (FHWA PROPERTY)

BENTICK PROPERTY

POTLATCH PROPERTY

IDL PROPERTY

IDL PROPERTY

ESTIMATED BASE OF RIVER BANK

ST. JOE RIVER

SILT CURTAIN TO DEPLOYED DURING SHORELINE CONSTRUCTION

RIP-RAP REMOVED DURING EXCAVATION ACTIVITIES WILL BE RESTORED APPROXIMATELY TO IT'S EXISTING TOPOGRAPHY

Notes

1. Excavated areas will be backfilled with clean soil/overburden segregated during remedial excavation activities, and clean backfill material imported from an off-site source. Backfilled surfaces will be graded to resemble pre-existing grades.
2. All finish grades will flow smoothly with one another and with the existing topography adjacent to the finish graded surfaces. Uneven areas/low spots will be eliminated to the extent practicable to provide positive drainage.
3. Silt curtain will be deployed in the St. Joe River during restoration activities along the Potlatch Shoreline. Silt curtain will be removed following the completion of Potlatch Property Shoreline restoration.
4. Following the completion of grading, areas disturbed on Potlach Property due to construction including backfilled excavation areas will be seeded to provide permanent cover. In addition, 15 feet wide area landward of the restored rip-rap on Potlatch Property will be re-vegetated with native plant species and may include native trees such as western larch (Larix occidentalis), black cottonwood (Populus trichocarpa), and Douglas fir (Pseudotsuga menziesii) and shrubs such as snowberry (Symphoricarpos albus), red-osier dogwood (Cornus stolonifera), and western serviceberry (Amelachier alnifolia). Willow whips (Salix species) will be inserted within the restored rip-rap.
5. Trees will be planted on 15-foot centers and shrubs will be planted on 5-foot centers.
6. The locations of all features shown are approximate.
7. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. cannot guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.

Reference: Existing topographic contours, property boundaries, site features including asphalt/concrete/gravel surfaces, existing trees and underground utilities are based on Meckel Enginineering & Surveying survey file dated May 24, 2012 and September 25, 2012.

Legend

	Property Line
	Expected Limits of Backfill (See Note 1)
2480	Existing Topographic Contours (Feet - NAVD 88)
2480	Proposed Grade Contours (Feet - NAVD 88), (See Note 2)
	Silt Curtain (See Note 3)
IDL	Idaho Department of Lands
FHWA	Federal Highway Administration

N W E S

60 0 60
FEET

Grading and Restoration Plan

Avery Landing Site
Avery, Idaho

GeoEngineers

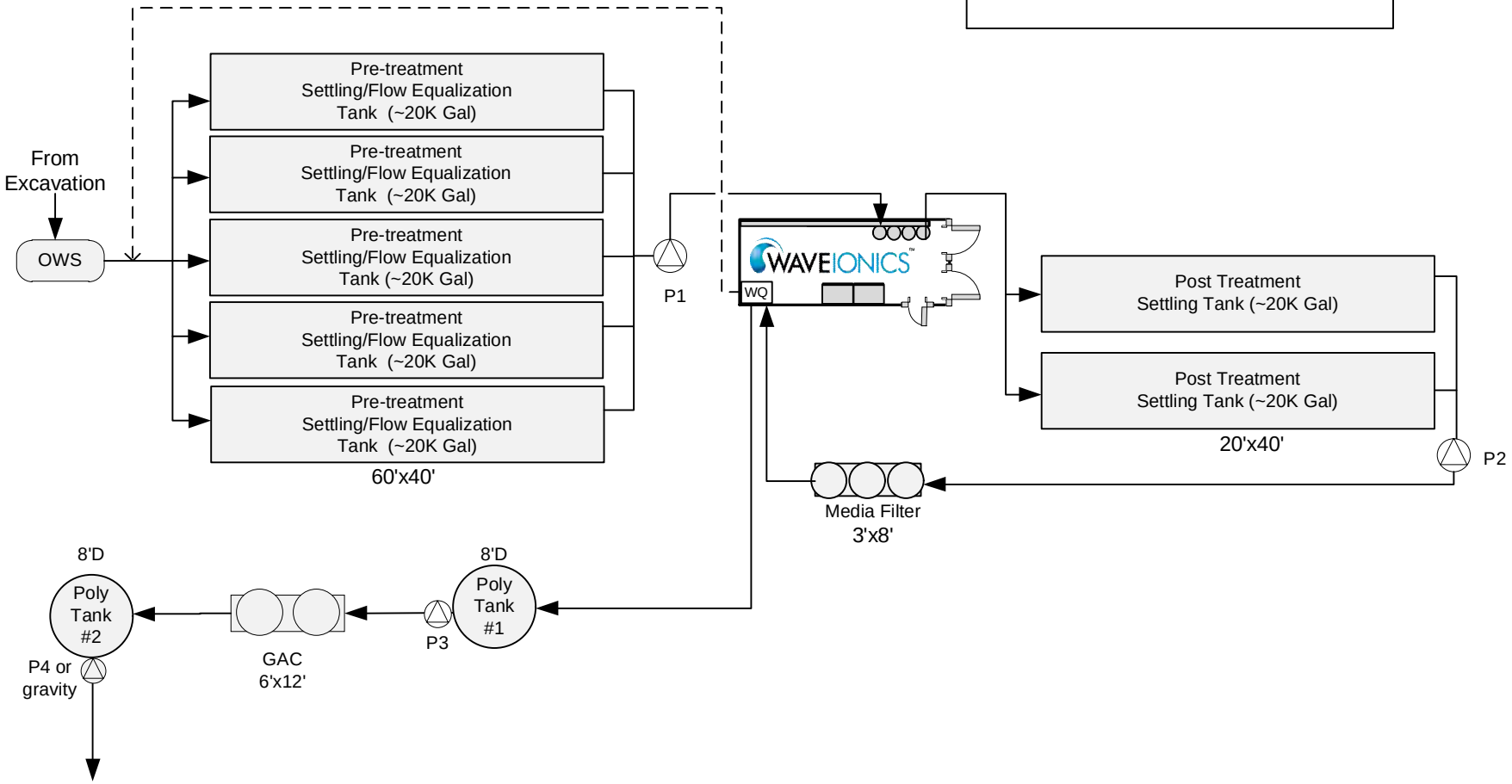
Figure 7

P:\2\23150\6\02\CAD\Workplan Figures\23150-02 Fig 7 Grading and Restoration Plan.dwg\TAB:LANDSCAPE modified by tmichaud on Feb 27, 2013 - 17:10

WAVEIONICS™ EC

Treatment Equipment Layout

General Operations (PH.2)



NOTES:

1) Water is automatically analyzed for turbidity and pH after media filter and prior to discharge into Poly Tank #1. If water quality discharge parameters have been met water will pass to Poly Tank #1. If not water will be automatically recirculated to the Pre-Treatment tanks as a safety measure.

2) Actual placement of components may differ based on site constraints. Flow path through the system will remain the same.

Client: PACIFIC PILE & MARINE		
Project: Avery Landing (aka Potlatch Clean-up)		
Date: 2/25/2013	Rev; 2	Figure 8
By: L.Doty	WATERTECTONICS	

APPENDIX A
Quality Management Plan

Quality Management Plan

Avery Landing Site
Avery, Idaho

for
U.S. Environmental Protection Agency on Behalf of Potlatch Land and Lumber

March 4, 2013

GeoEngineers

Plaza 600 Building
600 Stewart Street, Suite 1700
Seattle, Washington 98101
206.728.2674

Quality Management Plan

Avery Landing Site
Avery, Idaho

File No. 2315-016-02

March 4, 2013

Approvals:

Signature: _____ Date: _____

John M. Herzog, PhD, Principal, GeoEngineers

Signature: _____ Date: _____

Robert S. Trahan, Environmental Geologist, GeoEngineers

Signature: _____ Date: _____

Mark J. Lybeer, Quality Assurance Leader, GeoEngineers

Signature: _____ Date: _____

Earl Liverman, Federal On-Scene Coordinator, EPA

RST:JMH:csv

GeoEngineers

Table of Contents

RECORD OF AMENDMENTS

Revision	Author	Date	Comments

1.0 INTRODUCTION

This Quality Management Plan (QMP) documents GeoEngineers quality system for planning, implementing, documenting, and assessing the effectiveness of activities to support environmental activities for the removal action being performed by the Potlatch Land and Lumber (Potlatch) at the Avery Landing Site (Site) located in Avery, Idaho. Environmental activities include implementation of an Environmental Protection Agency (EPA) directed removal action, review of data results and interpretation of chemical and/or physical measurements relating to the environment. Implementing a comprehensive QMP is necessary to ensure that accurate environmental data are available to support the decision process. GeoEngineers, Inc. (GeoEngineers) is committed to quality assurance (QA) and quality control (QC) practices, and incorporating them into environmental studies and activities. These practices enable GeoEngineers to generate accurate data in a cost-effective manner.

This QMP has been prepared to meet EPA requirements, described in document QA/R-2, EPA Requirements for Quality Management Plans dated March 2001 (EPA, 2001). EPA requirements are based on the national consensus standard, ANSI/ASQ E4-2004, Quality Systems for Environmental Data and Technology Programs – Requirements with Guidance for Use (ANSI/ASQ, 2004). This QMP outlines the guidelines and practices that lead to effective planning and execution of environmental studies, and describes procedures for reporting QA/QC activities. It applies to the work performed by GeoEngineers that involves acquiring environmental data generated from direct measurement activities or from existing data (i.e., collected from other sources, or compiled from computerized databases and information systems).

1.1. Mission Statement and Core Values

GeoEngineers operates on the fundamentals defined by our purpose, overarching goals and core values. The fundamentals are defined as followed.

1.1.1. Purpose

We Find a Better Way to apply the earth science and technology to improve the world we live in.

1.1.1.1. OVERARCHING GOALS

- A Reputation of Excellence: Where our name connotes the standard of technical and professional excellence in our areas of practice.
- Growth through Leadership: Where we lead to expand opportunities for ourselves and our clients throughout the world.

1.1.1.2. CORE VALUES

- We think **safety** first.
- We deliver **unparalleled service** to our clients.
- We demonstrate **absolute integrity** in all we do.
- We achieve **technical excellence** in our operations and work products.
- Internal and external **teamwork** is essential for the success of our clients and our company.

- **Caring and respect** define our culture.
- We are committed to **broad, internal ownership** of GeoEngineers.
- Our **profitability** generates attractive financial rewards for our shareholders and our employees.
- We seek and **embrace opportunity** for our staff and our company.

1.2. Ethics Policy

GeoEngineers is committed to conducting business in an honest and ethical manner. The centerpiece of our core values is demonstrating absolute integrity in all that GeoEngineers does. This is communicated to every new employee, is a component of annual performance reviews and is carefully monitored by our executive management team. To a great extent, GeoEngineers relies on the individual behavior and choices of each employee. Therefore, great care is taken to hire and retain individuals that recognize and have demonstrated ethical practice. Every person employed by GeoEngineers is expected to follow all applicable laws, regulations and company policies that govern his or her work. However, their responsibility to ethical practice goes beyond that. Employees are also the company's eyes and ears. Asking questions and raising concerns when an employee is unsure if something is not right is vital to maintaining our integrity.

GeoEngineers ethics policy is intended to inform our employees, Board members, and third parties of the way GeoEngineers and its subsidiaries are expected to conduct business. When employees have any ethical question, they are expected to seek advice from their supervisor, a Principal Business Unit Leader and/or Human Resources. The raising of ethical concerns is encouraged at GeoEngineers. This requires the commitment and dedication of every employee. Employees are expected to follow the letter and spirit of:

- Company guidance and policy;
- Applicable international, federal, state and local laws/regulations; and
- Integrity, honesty and fairness.

1.3. Commitment to Quality

GeoEngineers' core values include providing unparalleled service to our clients, demonstrating absolute integrity in all we do and achieving technical excellence in our operations and work products. In order to establish and enhance our reputation as the leading provider of consulting and engineering services, we are committed to satisfying our clients' expectations for quality and meeting the statutory and regulatory requirements applicable to our work. GeoEngineers is continually seeking to improve the effectiveness of our Quality Management System (QMS). GeoEngineers compares our QMS against the best management practices employed within our profession. We:

- Strive to continually improve the level of satisfaction that our clients experience with the quality of our services and work products;
- Strive to ensure that our technical competencies, quality management practices, and QMS remain appropriate for the types of services and work products that we provide our clients;

- Comply with applicable legal and ethical requirements, safety requirements, and financial management requirements, as well as the quality requirements mutually agreed upon with our clients or established within our corporate operational practices;
- Provide the budgetary support and resources necessary to effectively implement and continually refine our QMS; and
- Periodically evaluate the quality of our professional performance and the effectiveness of our QMS, and based on such evaluations, establish and update reasonable, relevant, achievable, and economically feasible objectives for improvement.

2.0 PROJECT MANAGEMENT AND ORGANIZATION

In general, the achievement of required levels of quality in the services and work products offered is the shared responsibility of the technical staff performing the work. The project organization facilitates the efficient production of project work, allows for an independent quality review, and permits resolution of any QA issues. Descriptions of the responsibilities, lines of authority and communication for the key positions providing QA and QC for the Avery Landing Site Removal Action summarized in the Quality Assurance Project Plan (QAPP) presented in Appendix C off the Avery Landing Removal Action Work Plan (Work Plan; GeoEngineers, 2013). Qualifications of key individuals with GeoEngineers for the Avery Landing Removal Action project are included in Attachment A.

3.0 QUALITY SYSTEM COMPONENTS

GeoEngineers quality system is comprised of multiple elements to ensure that the services and deliverable work products provided by GeoEngineers meet or exceed expectations for quality, and address all applicable contractual and regulatory requirements, within the boundaries of established, technically defensible engineering practices. The principal elements of GeoEngineers quality system include:

- **Management Review** – Periodic reviews are conducted to ensure the continued suitability, adequacy, and effectiveness of the QA program.
- **Contracts and Proposals** – Contracts and proposals are reviewed for negotiating appropriate scopes of work and contractual terms and conditions for awarded projects or task orders.
- **Independent Technical Review** – Independent technical reviews of technical reports and other deliverable project documents are completed to ensure accuracy and precision of the work product.
- **Preparation, Review, Approval, and Update of Quality and Technical Procedures** – The preparation, review, approval, and update of GeoEngineers quality and technical procedures is completed, as appropriate, to ensure the continued suitability, adequacy, and effectiveness of the QA program.
- **Design Control** – Design control is managed to ensure the continued suitability, adequacy, and quality of design work products (e.g., engineering drawings, specifications, or sketches).

- **Field and Subcontractor Inspection** – Inspections of field, laboratory, or office activities are conducted periodically for projects conducted by GeoEngineers.
- **Calibration, Control and Maintenance of Measuring and Test Equipment** – GeoEngineers-owned measuring and test equipment used in field and laboratory investigations is calibrated, controlled, and maintained in general accordance with the manufacture's recommendations.
- **Corrective and Preventive Action** – Corrective and preventive action is initiated by GeoEngineers in response to externally or internally reported non-conformances.
- **Training** – GeoEngineers personnel receive relevant and appropriate levels of training to support the completion of their project assignments.

In addition to the quality system elements listed above, project-specific plans are developed to ensure a high level of services and deliverable work product. Project-specific plans include:

- **Work Plan** –The work plan describes the overall project and provides details on the specific project tasks that will be completed.
- **Site Specific Sampling Plan (SSSP)** – The SSSPs serves as the primary guide for operating procedures for field work to be performed.
- **Quality Assurance Project Plan (QAPP)** – The QAPP presents the objectives, procedures, organization, and specific quality assurance and quality control activities designed to achieve data quality goals established for the project. Environmental measurements will be conducted to produce data that are scientifically valid, of known and acceptable quality and that meet established objectives. QA/QC procedures will be implemented so that the precision, accuracy, representativeness, completeness and comparability of the data generated meet the specified data quality objectives.
- **Health and Safety Plans (HASP)** – This plan is to be used by GeoEngineers personnel if the field work entails potential exposures to contaminants or unusual situations. All plans are to be used in conjunction with current standards and policies outlined in the GeoEngineers Health and Safety Program Manual.

Project decisions, conclusions, and recommendations resulting from environmental data collection will be based upon verified (validated) data. The purpose of data verification is to ensure that data used for subsequent evaluations and calculations are scientifically valid, of known and documented quality, and legally defensible. Field data verification will be used to eliminate data not collected or documented. Laboratory data verification will be used to eliminate data not obtained using prescribed laboratory procedures. The QA Leader will validate data collected from the field investigation to ensure that the data are valid and usable. The data quality assessment will help to achieve an acceptable level of confidence in the decisions that are to be made based upon the project data. Data will be validated in general conformance with EPA functional guidelines for data validation (EPA, 2004 and 2009). The results of the data quality assessment will be documented in a written report prepared to document the overall quality of the data relative to the data quality objectives defined by the QAPP.

4.0 PERSONNEL QUALIFICATION AND TRAINING

GeoEngineers integrates a suite of services for managing the earth's resources. Since our founding in 1980, GeoEngineers has successfully completed more than 30,000 projects worldwide for clients in the Energy, Transportation, Water and Natural Resources, Development and Federal markets. Our specific capabilities include:

- **Environmental Site Assessment and Remediation** – Site assessments and characterization, feasibility studies, risk assessments, remediation and cleanups.
- **Geotechnical** – Site selection, foundations, ground stabilization, erosion control, geophysical investigation, seismic analyses, numerical modeling, special inspection and testing and construction monitoring.
- **Geologic** – Coastal, fluvial, and upland geomorphology, geologic hazards, critical area ordinances, sand and gravel mine evaluations and forest practice applications.
- **Water Resources** – Groundwater, water supply, water rights, watershed, hydrogeology, water quality, wellhead protection, storm water, aquifer analysis, dewatering and modeling.
- **River and Stream Management** – Hydrology, bank stabilization, engineered logjams, channel migration and sediment transport.
- **Ecological** – Fisheries science, wetlands delineation and mitigation, wildlife, nearshore, marine, habitat restoration, riparian corridors, subtidal habitat and river engineering evaluations.
- **Permitting** – Endangered Species Act, Clean Water Act, National Environmental Policy Act, State Environmental Policy Act and other regulatory issues.
- **Planning** – Land use, geologic hazard reduction, siting studies and regulatory interpretation.
- **Geospatial and GIS** – Data collection, analyses, map integration and remote sensing (including LiDAR terrain modeling).

GeoEngineers staff maintains the necessary certifications and registrations required for the projects we work on, including professional engineers, licensed geologists and engineering geologists, a certified fisheries professional, certified floodplain managers, and professional wetland scientists. All GeoEngineers professionals in the principal, associate, senior and engineer/scientist 2 labor categories must be registered in their field of practice, if registration is available, in the State in which the individual practices. All professionals, regardless of professional level, are encouraged to become registered as soon as possible after meeting the eligibility requirements.

All GeoEngineers employees partake in an annual review process. A portion of the review process is aimed at ensuring the employee maintains the requirements and exceeds the minimum level of expertise for the license(s) they possess. The annual review process includes: 1) documenting employee's needs to maintain professional license(s), certification(s), accreditation(s) or other obligations; 2) identifying the needs of the employee to maintain the requirements of the professional license(s), certification(s), accreditation(s) or other obligations; 3) ensuring that the

employee has the required training to maintain the professional license(s), certification(s), accreditation(s) or other obligations.

GeoEngineers places a strong emphasis on helping all staff develop the skills and understanding of the systems needed to effectively manage complex projects involving multiple technical disciplines and/or office locations. Each of our technical staff participated in a Skills, Experience, Excellence Development (SEED) training course when they arrive at GeoEngineers, and safety training courses. GeoEngineers staff undergoes training by our Health and Safety Manager to ensure each task and activity with safety in mind.

5.0 PROCUREMENT OF ITEMS AND SERVICES

GeoEngineers subcontracts with analytical laboratories that are compliant with our prime contract terms to perform chemical analysis of environmental samples collected. Analytical laboratories comply with Standard Operating Procedures (SOPs) to provide legally defensible analytical data that meet project and regulatory requirements. Laboratories that will be used are accredited for the specific analysis being requested. As needed, subcontracted laboratories contract with other laboratories to perform analyses that they are unable to perform. Data from analyses performed are reviewed by the subcontracted laboratory to ensure the quality of data meets the projects needs and complies with project and regulatory requirements. Specific performance requirements (e.g. reporting limits, turnaround time, and sample delivery schedules) for the laboratory are included in the task specific QAPPs following coordination with the laboratory.

Measuring and testing equipment used in field and laboratory investigations not owed by GeoEngineers are acquired, as needed, to complete the specified scope of work. Equipment is checked upon receipt to ensure proper function and calibration prior to use.

6.0 DOCUMENTATION AND RECORDS

GeoEngineers maintains a rigorous internal QA/QC program that is applied to all field studies, data collection, data analysis, report preparation, laboratory analysis and design efforts. The application of the quality management procedures is managed by the Project Manager and the ultimate responsibility is allocated to the Principal or Associate in charge of the project. Our hard copy and electronic project files, including data and documents, are keyed, managed and archived by the project number. All electronic and hard copy files are maintained at the local office level. Electronic files from each office location are copied to our corporate data storage facility for data security and daily backup. In addition, all offices have ready access to all electronic project files on SharePoint through secure internet connections.

6.1. Project Records

Project records are defined as completed, legible documents, in hard copy and/or electronic format that furnish evidence of the satisfactory completion of the required contractual or task order-specific scope of work as well as the quality of the services or work products provided. Project records are maintained and organized in discrete project- and task order-specific files. Project

records are physically/electronically isolated from work in process or draft/working versions of documents and at a minimum include:

- As-submitted proposal(s), the approved Master Service Agreement, all Task Orders and any addenda or modifications thereto;
- Professional resumes for all staff assigned to the project;
- Purchase orders, subcontracts, and any modifications;
- Incoming and outgoing correspondence (including e-mail) that affects project scope, schedule, budget, or quality, or that addresses environmental or occupational health and safety issues associated with the project;
- Meeting attendance sheet(s) and minutes for client meetings;
- Draft and final deliverable work products, with transmittal forms;
- Field or laboratory test data, and measuring and test equipment calibration/maintenance records;
- Project specific chain of custody documents;
- Internal surveillance inspection and audit reports;
- Client audit documentation, as provided;
- Completed Corrective/Preventive Action Requests from any external or internal audits/surveillances; and
- Completed annual management review documentation.

Unless otherwise directed by the client or GeoEngineers' corporate counsel, records are retained for a period of 10 years, after which they may be archived or (if specifically authorized by the client or corporate counsel) destroyed.

6.2. Project Documents

The development, review and circulation of written deliverables are documented using a "Correspondence Checklist" (CCL). The CCL documents: 1) senior level review and approval of the deliverable; 2) file numbers for hard copy and electronic filing and archiving; 3) a review check-off list for all components of the document; 4) distribution method (PDF, email, fax, mail, etc.); and 5) a final Quality Control Checklist.

The QA/QC steps for deliverable production are as follows:

- All sections of the CCL are completed (whether draft or final).
- The different people who review a report initial in the corresponding section (e.g., Principal or Project Manager review). Sections that do not apply are crossed out.
- In accordance with GeoEngineers' Policy on Signatory Authority, Principal/Associate review/approval is required and the Principal/Associate providing that review initials the CCL.
- All the necessary signatures are obtained before the report is sent out.

- The Table of Contents (if used) is checked to make sure the document headings, tables, figures and appendices correspond with the Table of Contents.
- To reduce the risk that the wrong, figures, analytical data or other appendix data are used, the Project Manager or Project Coordinator collects the figures, data and appendices and verifies that they are correct and provides them for quality control check with the rest of the report before final copy or PDF production.
- A Quality Control Checklist is used by the Project Manager and Project Coordinators to ensure that the document is complete and ready to go.
- The Project Coordinator completes a final QA/QC on the report before copying and alerts the Project Manager of any problems there may be with the report.
- After the QA/QC process, the report is copied, collated and bound (if necessary). A hard copy is placed in our Originals filing. A scanned copy is placed in the SharePoint Client folder.

7.0 COMPUTER HARDWARE AND SOFTWARE

The quality of hardware and software used by GeoEngineers is addressed in Information Technologies (IT) policies and guidance, which can be accessed through GeoEngineers' Intranet. GeoEngineers "Acceptable Use Policy" outlines the acceptable use of computer equipment and communications at GeoEngineers. These rules are in place to protect the employee and GeoEngineers to minimize the risks of virus attacks, compromising of network systems and services, and legal issues. Effective security is a team effort involving the participation and support of every GeoEngineers employee and affiliate who deals with information and/or information systems. Internet/Intranet/Extranet-related systems, including but not limited to computer equipment, software, operating systems, storage media, network accounts providing electronic mail, World Wide Web browsing, and FTP, are the property of GeoEngineers. These systems are to be used for business purposes in serving the interests of the company, and of our clients and customers in the course of normal operations.

Specific policies on or related to the quality of computer hardware and software are posted under Information Technology on GeoEngineers' Intranet.

8.0 PLANNING

To ensure delivery of high-quality work products and services, GeoEngineers utilizes the general concepts outlined in the EPA Data Quality Objectives (DOQ) Process to: 1) evaluate the problem; 2) identify the goals of the project; 3) identify information inputs; 4) define the project boundaries; 5) develop an analytic approach; 6) specify performance criteria; 7) develop a plan for obtaining data; and 8) utilizing data obtained to set project specific goals. The DQO process enables the project manager, in coordination with the QA leader, to set performance or acceptance criteria for environmental data.

Documentation of field sampling data will be reviewed for conformance with project QC requirements described in site specific QAPPs. At a minimum, field documentation will be checked for proper documentation of the following:

- Sample collection information (i.e., date, time, location, matrices, etc.);
- Field instruments used and calibration data;
- Sample collection protocol;
- Sample containers, preservation, and volume;
- Field QC samples collected at the frequency specified;
- COC protocols; and
- Sample shipment information.

Sample receipt forms provided by the laboratory will be reviewed for QC exceptions. The final laboratory data package will describe (in the case narrative) the effects that any identified QC exceptions have on data quality. The laboratory will review transcribed sample collection and receipt information for correctness prior to delivering the final data package.

GeoEngineers evaluates specific task order requirements, and prepares appropriately detailed plans or instructions that address the project's scope of work; budgets and schedule; milestones, health and safety requirements, daily tailgate meeting requirements for field work; technical requirements and specific quality standards for field studies and laboratory testing; data analysis and report preparation; and other guidance as necessary to ensure acceptable and defensible quality in the work performed.

9.0 IMPLEMENTATION OF WORK PROCESSES

The Principal-In-Charge oversees the implementation of work process. To ensure that the collection of environmental data is of sufficient quality to meet project goals in a safe efficient manner and Technical/Field Staff are provided the following:

- All available information necessary to properly execute the work;
- Specific instructions for performing the work, with a level of detail commensurate with the nature of the work and the experience of the workforce;
- Descriptions of necessary material, equipment, and monitoring/measurement devices;
- Applicable quality procedure, technical procedure or other processes for monitoring and measurement of work product and service quality (including requirements for performing technical reviews on all draft and final deliverable work products; and
- Other information, as required, to fulfill the requirements of the scope of work.

Subcontracted analytical laboratories are responsible for following appropriate QA and QC procedures for handling and/or analyzing collected samples and reviewing analytical results to ensure that the QC requirements have been met.

10.0 ASSESSMENT AND RESPONSE

The effectiveness of the quality system is evaluated at a minimum on an annual basis using quality system audits, technical reviews, performance evaluations data quality assessments, technical system audits and surveillance. All field or laboratory activities conducted for GeoEngineers are evaluated using the methods described in Section 8.0 to determine whether data collection activities are implemented as planned and that the data are of the right type, quality, and quantity to support their intended use. The Principal-In-Charge is ultimately responsible for assuring that data quality assessment is done for each project that involves environmental data.

Appropriate corrective and preventative actions will be taken to eliminate the cause of a detected non-conformance or other undesirable situation directly observed, observed during inspections or from internal audits.

11.0 QUALITY IMPROVEMENT

The Project Manager in conjunction with the Principal-in-Charge is responsible for identifying, planning, implementing and evaluating the effectiveness of the quality improvement methods for individual projects. The quality improvement is achieved by assessing the effectiveness of the processes for collection and use of project related data, and by taking preventive and corrective actions to improve those processes. The preventative and corrective actions help ensure that conditions adversely impacting project quality are prevented or identified promptly, including determining the nature and extent of the problem, and corrected as soon as possible. Individual responsibilities, lines of authority and communication for the key positions providing QA and QC are described in Section 2.0. GeoEngineers follows a process for continuous improvement. During this process we are evaluating every step.

- Identify the potential problem – A problem that can negatively impact project quality can be identified by any employee or individual on the project team. Once a problem is identified the Project Manager is contacted. The Project Manager will determine other team members that need to be involved in the corrective action and will work with other project team members to generate solution through design.
- Implement the design solution – The Project Manager will incorporate the design solution into project related documents and communicate those changes to other project team members impacted by the change.
- Monitor the design solution – The Project Manager will monitor implementation and evaluate the implemented design solution.
- Adjust the design solution if necessary – The Project Manager will identify areas for improvement and make changes, if needed based on observations made during the Monitoring of the design solution step.

The Principal Business Unit Leader is ultimately responsible for the evaluation of quality improvement effectiveness within their region.

12.0 REFERENCES

United States Environmental Protection Agency (EPA), "EPA Requirements for Quality Management Plans, EPA QA/R-2," United States Environmental Protection Agency Office of Environmental Information, Publication EPA/240/B-01/002, dated March 2001.

American National Standards Institute/American Society for Quality (ANSI/ASQ), "Quality systems for Environmental data and Technology Programs – Requirements with Guidance for Use," Publication ANSI/ASQ E4-2004, dated 2004.

GeoEngineers, Inc., "Draft Work Plan, Avery Landing Site, Avery Idaho," GEI File No. 2315-016-02, prepared for U.S. Environmental Protection Agency on Behalf of Potlatch Land and Lumber, dated March 4, 2013.

U.S. Environmental Protection Agency (USEPA). "USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review," EPA 540-R-04-004, Office of Emergency and Remedial Response. US Environmental Protection Agency, Washington, DC. October 2004.

U.S. Environmental Protection Agency (USEPA). "Guidance for Labeling Externally Validated Laboratory Analytical Data for Superfund Use," EPA 540-R-08-005, Office of Solid Waste and Emergency Response. US Environmental Protection Agency, Washington, DC. January 2009.

ATTACHMENT A
Resumes

JOHN HERZOG, PHD, LHG, PRINCIPAL

Education

Ph.D., Geological Sciences, University of Colorado, 1995
M.S., Geological Sciences, University of Colorado, 1993
B.S., Oceanography, University of Washington, 1989

Registration

Professional Licensed Geologist: Washington

Experience

John is a professional geologist with more than 15 years of professional experience in strategy development, cleanup studies, remedial design and remediation construction management for port clients. He has managed a broad range of waterfront-related cleanup and redevelopment projects, especially those with issues related to contaminated sediments, groundwater, soil and habitat restoration. John is an accomplished negotiator with a comprehensive understanding of the regulatory issues related to both the MTCA and CERCLA cleanup programs and at negotiating cleanup requirements with project trustees. His substantial experience and skill in devising practical applications to resolve scientific challenges enables him to effectively address crucial issues, and to meet the specific, distinctive needs of diverse port, public and private clients on cleanup and cost recovery projects.

- Port of Everett, Mill A (South Terminal Redevelopment); Everett, Washington
- Port of Everett, East Waterway Site Review; Everett, Washington
- Port of Anacortes, Former Scott Paper Mill Cleanup; Anacortes, Washington
- Port of Anacortes, Dakota Creek Shipyard Cleanup; Anacortes, Washington
- Port of Anacortes, Cap Sante Marine Cleanup; Anacortes, Washington
- Port of Anacortes, Former Shell Tank Farm Cleanup; Anacortes, Washington
- Port of Skagit County, Taxiway F Cleanup and Restoration; Burlington, Washington
- Lockheed Shipyard, Former Lockheed Shipyard Cleanup; Seattle, Washington
- Washington State Department of Ecology, Everett Asarco Lowlands; Everett, Washington

ROBERT TRAHAN, ENVIRONMENTAL GEOLOGIST

Education

M.S. Environmental Geosciences, Michigan State University
B.S. Geology, Washington State University

Certificates & Training

40-Hour HAZWOPER
OSHA (8-Hour) HAZWOPER Refresher

Experience

Robert has been an environmental geologist in Washington State since 2003. He is skilled in environmental site characterization field activities and cleanup monitoring as well as groundwater modeling data collection and analysis. Robert has completed soil, groundwater and surface water sampling following industry and regulatory sampling protocols, he has monitored excavations involving removal of impacted soil, segregation and sampling, and has developed efficient methods for documenting daily field activities. He is adept at implementing project plans and specifications and reviewing contractor requests for information. Robert has worked on project teams involving many design professionals and contractors and communicates well in the field with general and specialty contractors and owners. He has worked on transportation and infrastructure projects and is familiar with the health and safety aspects of construction and remediation.

- Port of Anacortes, Former Scott Paper Mill Cleanup; Anacortes, Washington
- Port of Anacortes, Dakota Creek Shipyard Cleanup; Anacortes, Washington
- Port of Anacortes, Cap Sante Marine Cleanup; Anacortes, Washington
- Port of Anacortes, Former Shell Tank Farm Cleanup; Anacortes, Washington
- Port of Skagit County, Taxiway F Cleanup; Burlington, Washington
- Port of Seattle, Terminal 115 North RI/FS; Seattle, Washington
- Bill & Melinda Gates Foundation, World Headquarters Campus Cleanup and Development; Seattle, Washington

ABHIJIT JOSHI, ENVIRONMENTAL ENGINEER

Education

M.S., Civil Engineering and Environmental Engineering, Texas A&M University
B.S., Civil Engineering, Sardar Patel University

Certificates & Training

40-Hour HAZWOPER
OSHA (8-Hour) HAZWOPER Refresher

Experience

Abhi has experience in large- and mid-sized environmental field projects, including contaminated soil and groundwater remediation, contaminated sediments and dredging. His experience has been gained overseeing construction actives on sites with multiple contaminated media and with a range of private and regulatory stakeholders. He has strong field-work presence with experience in multiple roles. Abhi is very good at solving logistical, construction-related problems and works well with project managers and subcontractors to provide solutions that are cost effective and meet client expectations. Abhi recently completed a project for a Port client where he was on site five to seven days a week for almost six months monitoring remedial excavation of approximately 86,000 cubic yards of petroleum contaminated soil and construction debris. This project also includes soil characterization for disposal and involved extensive dewatering activities to facilitate the excavation.

- University of Washington, Confidential U District Redevelopment Site Cleanup; Seattle, Washington
- Seattle Housing Authority, 12th Avenue EPA Brownfields Cleanup Site; Seattle, Washington
- Lake Union IV, LLC, Interurban Exchange 2 Redevelopment Project; Seattle, Washington
- Port of Anacortes, Former Scott Paper Mill Cleanup; Anacortes, Washington
- Port of Anacortes, Dakota Creek Shipyard Cleanup; Anacortes, Washington
- Port of Anacortes, Former Shell Tank Farm Cleanup; Anacortes, Washington
- Port of Skagit County, Taxiway F, Cleanup and Restoration; Burlington, Washington

MARK LYBEER, ENVIRONMENTAL DATA ANALYST

Education

B.S. Environmental Chemistry, University of Michigan, Dearborn, Michigan, 1996
Advanced Paralegal Certification, Edmonds Community College, Edmonds, Washington, 2008

Certifications & Training

Microsoft Access Levels I, II; and III New Horizons Computer Learning Centers
Managing Environmental Data with Microsoft Access training class; 2006

Experience

Mark Lybeer has more than 13 years of experience in analytical chemistry and environmental data management. He has intimate knowledge of the nuances between laboratory and field sampling procedures, and by extension, knowledge of the wide array of discrepancies that potentially arise in the entire life-cycle of a sample. Mark works extensively with the CLP-National functional Guidelines (organic, inorganic, and chlorinated dioxin/furan data review) and understands the factors that affect data quality and data usability. He has legal training in major Federal environmental laws including the Clean Air Act, RCRA, CWA, TSCA, and ESA. Mark's recent experience includes development and review of Quality Assurance Project Plans, performing data quality reviews, and performing formal data validation services. He also serves as the project laboratory contact/coordinator, and performs fuels chemistry fingerprinting and environmental forensics. Mark currently supports a wide range of environmental projects coordinating analytical chemistry aspects, analytical data validation and electronic data management.

In addition, Mark is part of GeoEngineers' environmental data management group, a collection of experts in data validation, analytical chemistry, database management, modeling, geographic information systems (GIS) and web-based data management tools. Mark's role in a project starts with helping define data quality objectives, selecting proper analytical methods, and selecting and coordinating with the laboratories. Laboratory results are received in a specified electronic data deliverable (EDD) format and Mark ensures compliance with the specification, loads the data, reviews the data quality, and creates many of the final outputs from our centralized database system. Mark's laboratory experience has also allowed him to emerge as a company-wide internal analytical consultant. His chemical expertise allows him to critique aspects of analytical data and provide solutions to his colleagues.

- Rayonier, Inc., Port Angeles Mill Environmental Remediation Services; Port Angeles, Washington
- New York State Department of Fish & Wildlife, Hudson River Watershed Project; New York
- The Lower Willamette Group, Portland Harbor Superfund Site; Portland, Oregon
- Port of Anacortes, Port-wide Environmental Remediation, Port of Anacortes, Washington
- Montrose Settlements Restoration Program, National Oceanic and Atmospheric Administration (NOAA); Various Sites, Southern California
- Thea Foss Waterway Allocation, National Oceanic and Atmospheric Administration (NOAA); Tacoma, Washington
- Port of Skagit County, Taxiway F Cleanup and Restoration; Burlington, Washington
- WSDOT, Harrison Wetland Site; Tacoma, Washington

JOHN HANEY, PE, SENIOR ENVIRONMENTAL ENGINEER

Education

B.S., Environmental Engineering, Montana College of Mineral Science and Technology

Registrations & Training

Professional Engineer (Environmental): Washington
HAZWOPER 40-Hour
OSHA (8-Hour) HAZWOPER Refresher

Experience

John Haney is a professional engineer, with over nine years of experience in environmental engineering and consulting. His experience includes conducting Phase I and Phase II environmental site assessments (ESAs) (petroleum-, metals-, and hazardous waste-contaminated sites and abandoned mine lands), preparing reports and permits, and preparing engineering specifications (CSI format). He also has completed underground storage tank (UST) system installations and removals, underground oil-pipeline removals, and unexploded ordinance/depleted uranium excavation. He has extensive experience in groundwater monitoring, groundwater pump and treatment system operation and maintenance, facility decontamination and decommissioning, and remediation. His representative project experience includes:

- Stejer Development, LLC., Phase II Environmental Site Assessment and Remediation, Wendle Ford Dealership; Spokane, Washington
- Spokane Public Facilities District (SPFD)/City of Spokane, Parking Lot Including Sidewalks, Environmental Remediation; Spokane, Washington
- BNSF Railway Company, Phase II Environmental Site Assessment and Remediation, Hillyard Rail Yard; Spokane, Washington
- Confederated Tribes of the Colville Reservation, Phase I and II Environmental Site Assessments and Remediation, Various Sites; Nespelem, Washington
- Panhandle State Bank, Phase I and Phase II ESA's and Cleanup Action, Intermountain Community Bank Facility; Spokane Valley, Washington
- Kaiser Aluminum Fabricated Products, LLC, Lagoon Cleanout and Sludge Dewatering, Trentwood Facility; Spokane Valley, Washington
- Shell Oil Products US, Site Delineation, Groundwater Monitoring and Field Activities; Portland Terminal and Various Service Station Facilities in Oregon
- City of Salem, Phase II Site Assessments and UST Removals, Salem, Oregon

SCOTT LATHEN, PE, ENVIRONMENTAL STAFF ENGINEER

Education

B.S., Civil and Environmental Engineering, Brigham Young University
M.S., Environmental Engineering, Brigham Young University

Registrations & Training

Professional Engineer: Washington
40-Hour HAZWOPER
OSHA (8-Hour) HAZWOPER Refresher

Experience

Scott is an environmental engineer who has provided environmental consulting services in Washington since 2007. He has experience performing Phase I and II Environmental Site Assessments (ESAs); preparing plans and specifications for remedial actions and observing their implementation; designing, operating, and maintaining remedial treatment systems; and groundwater monitoring. He was the field engineer for a large remedial cleanup that included stabilizing and capping lead-contaminated soil. He also is a certified Washington Site Assessor for underground storage tanks and has provided environmental services on dozens of projects.

- Country Financial, Petroleum Release Remediation, Swawilla Basin Road; Ferry County, Washington
- WSDOT, 395 Corridor Phase 1 ESA; Spokane, Washington
- BNSF Railway Company, Phase II ESA and Remediation, Hillyard Rail Yard; Spokane, Washington
- BNSF Railway, RCRA Hazardous Waste Cleanup, Taylor Edwards Site; Spokane, Washington
- BNSF Railway, Parkwater Facility, Operations & Maintenance, Groundwater and Remedial System Monitoring; Spokane, Washington
- Confederated Tribes of the Colville Reservation, Historic Smelter Site, Phase I Environmental Site Assessment; Sanpoil Arm of Lake Roosevelt, Keller, Washington
- Confederated Tribes of the Colville Reservation, UST Decommissioning Services, Keller and Round Lake Sites; Keller and Inchelium, Washington
- Holcim, Phase II Environmental Site Assessment, Remediation Pilot Testing, and Groundwater Monitoring; Spokane Valley, Washington
- Sandpoint Enterprises LLC, Sand Creek Office Building Limited Phase II ESA; Sandpoint, Idaho
- Waste Management, Inc., Waste Management Spokane Material Recovery Facility; Spokane, Washington
- Spokane County, Limited Phase II Environmental Site Assessment, Spokane Raceway Park; Airway Heights, Washington

APPENDIX B
Site Specific Sampling Plan

Site Specific Sampling Plan

Avery Landing Site
Avery, Idaho

for
U.S. Environmental Protection Agency on Behalf of Potlatch Land and Lumber

March 4, 2013

GeoEngineers

Plaza 600 Building
600 Stewart Street, Suite 1700
Seattle, Washington 98101
206.728.2674

Site Specific Sampling Plan

Avery Landing Site
Avery, Idaho

File No. 2315-016-02

March 4, 2013

Approvals:

Signature: _____ Date: _____

John M. Herzog, PhD, Principal, GeoEngineers

Signature: _____ Date: _____

Robert S. Trahan, Environmental Geologist, GeoEngineers

Signature: _____ Date: _____

Mark J. Lybeer, Quality Assurance Leader, GeoEngineers

Signature: _____ Date: _____

Earl Liverman, Federal On-Scene Coordinator, EPA

RST:JMH:csv

Table of Contents

LIST OF TABLES

LIST OF FIGURES

1.0 INTRODUCTION

This document presents a Site Specific Sampling Plan (SSSP) for the environmental sampling activities to be completed as part of the Avery Landing Site (Site) removal action. The Site is located approximately one mile west of Avery, Idaho (Figure B-1). This SSSP is to be used in conjunction with the Site Quality Assurance Project Plan (QAPP) which is presented in Appendix C of the Avery Landing Removal Action Work Plan (Work Plan; GeoEngineers, 2013). The information contained in this SSSP is based on information available at the time of preparation. This SSSP may be updated as additional information becomes available.

The SSSP and associated QAPP were prepared in general accordance with the requirements of 40 CFR 300.415(b)(4)(ii), EPA's Requirements for Quality Assurance Project Plans (EPA, 2001) and EPA's Guidance for Quality Assurance Project Plans (EPA, 2002).

2.0 PROJECT MANAGEMENT AND ORGANIZATION

The project management and organization elements of the SSSP, as detailed below, address the basic area of project management including the project history, team objectives, roles and responsibilities of the participants. This element of the plan ensures that the project has a defined goal, and that all participants understand this goal and that the planning outputs have been documented.

2.1. Personnel and Roles Involved in the Project

Key individuals and positions providing quality assurance (QA) and quality control (QC), including a description of the responsibilities, lines of authority and communication for the key individuals and positions providing QA and QC, is presented in the QAPP (Appendix C of the Work Plan).

2.2. Physical Description and Site Contact Information

Site Name	Avery Landing Site
Site Location	The Site is located approximately one mile west of Avery, Idaho, on the north side of the St. Joe River. The Site is located in the NW quarter of Section 16, Township 45 North, Range 5 East, Willamette Meridian, and is located at latitude 47° 13' 57'' North and longitude is 115° 43' 40'' West.
Property Size	Approximately 6 acres
Site Regulatory Contact	Earl Liverman, EPA On-Scene Coordinator
Nearest Residents	The eastern portion of the Site includes the Bentcik property, a seasonally occupied residence.
Primary Land Uses Surrounding the Site	North: Highway 50 ("St. Joe River Road"), owned by the Federal Highway Administration (FWHA). South: St. Joe River (rural/recreational) East: Rural/recreational West: Rural/recreational

2.3. Schedule of Work

Removal action activities being performed by Potlatch Land and Lumber (Potlatch) will be completed summer/fall of 2013. Post-removal action groundwater monitoring will be completed following completion of the removal action as approved by EPA. A schedule for mobilization/demobilization, removal action activities and reporting are presented in the Work Plan.

2.4. Historical and Background Information

Detailed information regarding Site and operational history, previous investigations and regulatory history and cleanup actions are presented in EPA's EE/CA (E&E, 2010) and/or Supplemental Investigation Report (GeoEngineers, 2011) and are summarized in the Work Plan.

2.5. Conceptual Site Model

Detailed information regarding the Conceptual Site Model is presented in EPA's EE/CA (E&E, 2010) and Supplemental Investigation Report (GeoEngineers, 2011). The nature and extent of contamination, sensitive species and environment, and cultural resources are summarized in the Work Plan.

2.6. Decision Statement

Decision Statements define the purpose and use of environmental data and serve as the basis for important decisions regarding key design features such as determining the end use of materials generated, response actions to be taken and/or the number and location of samples to be collected and the analyses to be performed.

2.6.1. Soil Excavation

2.6.1.1. OVERBURDEN SOIL

Decisions to be made during excavation of overburden soil are to:

- Confirm through field screening that overburden material meet the reuse criteria.
- Determine if the overburden soil used for backfill meets the compaction criteria following placement.

2.6.1.2. CONTAMINATED SOIL

Decisions to be made during excavation of contaminated soil are to:

- Determine if concentrations of contaminants in soil generated by the removal action meets landfill disposal criteria.

2.6.1.3. FINAL EXCAVATION LIMIT

Decisions to be made when the removal action is at the final excavation limit are to:

- Determine the vertical and lateral extent of petroleum contaminated soil within the removal action area.
- Determine the concentrations of petroleum hydrocarbons (TPH), VOCs, SVOCs, PCBs and metals in soil at the final excavation limit.

2.6.2. Imported Fill Material

Decisions to be made for imported fill material are to:

- Determine the concentrations of SVOCs, VOCs, PCBs and RCRA metals in imported fill.
- Determine the maximum dry density of imported fill material to confirm material is acceptable for placement.
- Determine if the imported fill material used for backfill meets the compaction criteria following placement.

2.6.3. Surface Water

- Determine surface water quality parameters to determine if the removal action is affecting surface water adjacent to the Site.

2.6.4. Water Treatment System

- Determine the effectiveness of the onsite treatment system in meeting surface water discharge criteria prior to discharging any water.
- Determine if treated water generated during removal action meet the surface water discharge criteria.
- Determine if the primary granular activated carbon (GAC) vessel in water treatment system are close to achieving breakthrough.
- Determine the chemical composition of product recovered by the water treatment system to determine the appropriate disposal facility.

2.6.5. Air

- Determine if dust/particulate generated by the removal action are being transported beyond the project boundary.

2.6.6. Groundwater

- Determine the concentrations of petroleum hydrocarbons (TPH), VOCs, SVOCs, PCBs and metals in groundwater following completion of the removal action monitor natural attenuation of Site contaminants.

2.7. Action Levels

Site action levels for the soil excavation, surface water monitoring, water treatment system monitoring, and air monitoring activities are presented in Table B-1. Water treatment system effluent discharge limits are presented in Table B-2. Import fill material criteria are presented in Table B-3.

3.0 DATA ACQUISITION AND MEASUREMENT OBJECTIVES

3.1. Site Diagram and Sampling Area

A Sampling Area is an area of the project in which a specific action will be performed to address the Decision Statements presented in Section 2.6. Figure B-1 shows the location of the Site and surrounding features. Figure B-2 shows the general Site layout, excavation areas and maximum expected limits of excavation based on the existing information, water treatment area and project boundary as well as upstream and downstream water quality sampling locations, and anticipated excavation limit sampling locations. The final excavation limits will be determined by EPA.

Sampling areas for the soil excavation and material generated by the soil excavation, imported fill material, water treatment system and associated product, air, surface water, and post-removal action groundwater are summarized in the following sections.

3.1.1. Soil Excavation

3.1.1.1. OVERBURDEN SOIL

Overburden soil overlying petroleum contaminated soil is a sampling area. This sampling area will be field screened for the presence of free-phase petroleum hydrocarbons, oil-staining, sheen exceeding field screening criteria, and field measured organic vapor during excavation. The approximate extent of the expected excavation limits is shown on Figure B-2. Based on the results of previous environmental investigations and experience gained by EPA as part of the 2012 removal action, the overburden/contaminated soil contact at the Site maybe as shallow as 2 feet below ground surface (bgs).

3.1.1.2. CONTAMINATED SOIL

Excavation activities to remove the underlying contaminated soil is a sampling area and will extend laterally until field screening evidence of petroleum contamination is no longer observed. Contaminated soil generated by the removal action will be stockpiled on Site and allowed to dewater until a representative sample from the stockpile passes a Paint Filter Liquids Test (PFLT; EPA Method 9095). If required by the receiving landfill, representative soil samples will be obtained from stockpiled contaminated soil for chemical analysis and may include SVOCs, VOCs, PCBs, TCLP and/or RCRA metals.

3.1.1.3. FINAL EXCAVATION LIMIT

Following confirmation of the final excavation limits passing sidewall and base field screening results, soil samples will be obtained from the sidewalls and base of the final excavation limit to determine final Site conditions and to determine baseline concentrations for natural attenuation monitoring. The approximate extent of the expected excavation limits are shown in Figure B-2. Based on the results of previous environmental investigations and experience gained by EPA as part of the 2012 removal action, petroleum hydrocarbon contaminated soil at the Site maybe as shallow as 2 feet bgs and could extend as deep as approximately 20 feet bgs.

3.1.2. Imported Fill Material

The source material for imported fill is a sampling area. Representative soil samples of the source material for imported fill soil will be collected and submitted to a chemical analytical laboratory to

determine if the source material meets the chemical analytical criteria for use at the Site (Table B-3).

The imported fill material used for backfill is also a sampling area and will be tested to confirm adequate compaction following placement. Representative samples will be obtained from the source material and submitted for laboratory analysis to determine the materials maximum dry density.

3.1.3. Surface Water

Surface water upstream and downstream of the Site on the St. Joe River are sampling areas. Surface water monitoring will be conducted at locations upstream and downstream of the removal action area to determine if Site activities are adversely affecting surface water quality in the St. Joe River.

3.1.4. Water Treatment System

The influent and effluent locations of the onsite water treatment system are sampling locations. Influent and effluent water samples will be collected for chemical analysis during system startup and operation to evaluate the performance of the treatment system and ensure that contaminants of concern are not being discharged to the St. Joe River exceeding discharge limits (Table B-2).

Water collected from between the primary and secondary GAC vessels in the water treatment system is a sampling location. These samples will be collected during normal operation to evaluate potential contaminant breakthrough.

3.1.5. Air

Air at the Site and in the nearby vicinity of the Site is a sampling area. Air monitoring for particulate matter will be conducted at locations upwind and downwind using field instruments to determine if Site activities are generating particulate concentrations that exceed action levels (Table B-1) at the project boundary.

3.1.6. Groundwater

Groundwater at the Site is a sampling area. New groundwater wells will be installed following removal action and groundwater samples will be obtained following completion of the removal action to monitor natural attenuation of Site contaminants. Sampling locations, frequency and duration will be determined following completion of the removal action in consultation with EPA.

3.2. Decision Rules

Decision Rules are statements that describe how the decisions will be made and how to address results exceeding action levels established for the project. Decision rules for the removal action are summarized in the following sections.

3.2.1. Soil Excavation

3.2.1.1. OVERBURDEN SOIL

If soil indicates the presence of free-phase petroleum hydrocarbons, oil-staining, sheen exceeding the field screening criteria, or elevated field measured organic vapor during excavation activities,

then the soil will be segregated, stockpiled and treated as contaminated (see Section 3.2.1.2). If soil generated during excavation activities to remove overburden material does not yield field screening evidence of petroleum contamination, then the material will be stockpiled on Site pending reuse as excavation backfill.

Overburden material used for backfill will be placed in the excavations using 24-inch lifts or less and will be compacted with equipment suitable for the soil type. If field density tests of the compacted overburden material used is below the minimum compaction requirements, additional compaction will occur until the density meets the minimum compaction criteria (Table B-1).

3.2.1.2. CONTAMINATED SOIL

If field screening results indicate the presence of petroleum contamination, then material represented by these field screening results will be transferred from the Site to a permitted landfill. Contaminated soil generated within the saturated zone will be stockpiled on Site and allowed to dewater until representative stockpile samples passes the PFLT. If representative samples of the stockpiled contaminated soil fail the PFLT, then the stockpile will be allowed to dewater further until representative stockpile samples passes the PFLT.

If requested by the receiving landfill, representative samples will be obtained for chemical analysis for soil disposal profiling. Sample results will be submitted to the landfill prior to transport to ensure that the material is acceptable for disposal.

If batteries, underground storage tanks (USTs), drums, etc. are encountered during excavation, soil removed from these areas will be segregated and sampled for TCLP and/or PCBs to determine whether the material designates as a dangerous waste. Dangerous waste will be transferred to a landfill permitted to receive such material.

3.2.1.3. FINAL EXCAVATON LIMIT

EPA will determine the final excavation limit. If soil at the estimated excavation limit indicates field screening evidence of petroleum contamination, then excavation activities will continue laterally until field screening evidence of contamination is no longer observed; and vertically until field screening evidence of petroleum contamination is no longer observed or to a maximum depth of approximately two feet below the seasonal low groundwater level of 17 feet bgs.

3.2.2. Imported Fill Material

If representative soil samples of the import fill material source exceed the chemical analytical criteria presented in Table B-3, then the import fill material source will not be used and additional sources of import fill material evaluated.

Import fill material used for backfill will be placed in the excavations using 24-inch lifts or less and will be compacted with equipment suitable for the soil type. If field density tests of the compacted fill material used is below the minimum compaction requirements, additional compaction will occur until the density meets the minimum compaction criteria (Table B-1).

3.2.3. Surface Water

If downstream surface water quality parameters exceed the action levels presented in Table B-1, additional Best Management Practices (BMPs) will be implanted to correct the action level exceedance or until no additional project activity modification is possible.

3.2.4. Water Treatment System

If effluent water sample results during system startup (before any water is discharged) exceed the surface water discharge criteria presented in Table B-2, then the water represented by this sample will be rerouted through the treatment system and/or the treatment system will be modified to improve efficiency until acceptable water sample results are achieved. If sample results during system startup (before any water is discharged) are below the limits presented in Table B-2, then treatment system will be considered operational and the treated water will be allowed to discharge to the St. Joe River.

If effluent water sample results from the water treatment system during the removal action exceed the surface water discharge criteria presented in Table B-2, then the discharge of treated water to the St. Joe River will be suspended and batched treated water rerouted through the treatment system until acceptable water sample results are achieved. If sample results from the water treatment system during the removal action are below the limits presented in Table B-2, then the water will be allowed to discharge to the St. Joe River.

If water samples from the water treatment system obtained from between the primary and secondary GAC vessels have detections of SVOCs or petroleum hydrocarbons that exceed the surface water discharge criteria presented in Table B-2, the primary GAC vessel will be replaced or GAC will be replaced with new material.

If product is obtained from the water treatment system, the product will be skimmed off, stored on Site in 55-gallon drums, laboratory analysis conducted as required by an appropriate disposal facility and disposed of separately from the treated water.

3.2.5. Air

If the air particulate concentration at the project boundary exceed the action levels presented in Table B-1, additional BMPs will be implanted to control dust (i.e., suspending excavation activities, soil wetting, etc.) until the air monitoring results are below the action levels.

3.2.6. Groundwater

Monitoring wells will be installed and groundwater will be sampled to monitor post-removal action groundwater conditions and natural attenuation of Site contaminants. Sampling locations, frequency and duration will be determined following completion of the removal action in consultation with EPA.

3.3. Information Needed for the Decision Rules

Parameters/analytes for the surface water monitoring, water treatment system monitoring, and air monitoring activities are presented in Table B-1. Water treatment system effluent discharge parameters and limits are presented in Table B-2. Import fill material analytical criteria are

presented in Table B-3. The information needed to apply the decision rules are described in the following sections.

3.3.1. Soil Excavation

3.3.1.1. OVERBURDEN SOIL

- Field screening results for the presence of free-phase petroleum hydrocarbons, oil staining, sheen exceeding field screening criteria, or elevated field measured organic vapor.
- Soil compaction results for backfilled overburden material.

3.3.1.2. CONTAMINATED SOIL

- Results of soil samples of stockpiled contaminated soil analyzed for PFLT.
- If required by the receiving landfill, stockpiled contaminated soil will be sampled for chemical analysis.

3.3.1.3. FINAL EXCAVATION LIMIT

- Field screening results for the presence of free-phase petroleum hydrocarbons, oil staining, sheen exceeding field screening criteria, or elevated field measured organic vapor.
- Soil samples results taken from the final excavation limits submitted for laboratory analysis of TPH, VOCs, SVOCs, PCBs and metals.

3.3.2. Imported Fill Material

- Soil samples of import fill material for chemical analysis.
- Results of maximum dry density testing for representative soil samples of imported fill material.
- Soil compaction results for backfilled imported fill material.

3.3.3. Surface Water

- Surface water quality parameters at upstream and downstream locations.

3.3.4. Water Treatment System

- Water treatment system influent and effluent sample results for chemical analysis during system startup.
- Water treatment system influent and effluent sample results for chemical analysis during removal action.
- Water treatment system sample results between the primary and secondary GAC vessels for chemical analysis during removal action.
- If required by the receiving facility, product samples will be sampled for chemical analysis.

3.3.5. Air

- Air particulate concentrations at the upwind and downwind project boundary locations.

3.3.6. Groundwater

- Water samples to monitor groundwater conditions and natural attenuation of Site contaminants.

3.4. Sampling and Analysis

Sampling and analysis protocols are described in greater detail in the QAPP. Field procedures including field screening, soil sample collection and field documentation as well as data quality objectives for chemical analysis are presented in the QAPP.

3.4.1. Soil Excavation

3.4.1.1. OVERBURDEN SOIL

The primary method for determining petroleum contaminated soil will be through water sheen testing, although the presence of free-phase petroleum hydrocarbons, oil-staining or elevated field measured organic vapor may also be used depending on field conditions. The procedure for water sheen testing will consist of collecting approximately 50 grams of representative soil at the selected locations within a sheen pan containing water. Samples that exhibits rainbow sheen (definite oil sheen, film or product that displays rainbow) will be considered contaminated. A passing test will be defined as soil that does not exhibit a rainbow sheen. If a rainbow sheen is observed in a sample, or if free-phase petroleum hydrocarbons, oil-staining or elevated field measured organic vapor using a photoionization detector (PID) is noted, then soil represented by this sample will be segregated and stockpiled on Site pending transport to a permitted landfill.

Overburden soil in which the presence of free-phase petroleum hydrocarbons, oil-staining, sheen exceeding field screening criteria, or elevated field measured organic vapor is not observed will be stockpiled on Site for reuse as backfill material.

Overburden soil material will be placed in the excavation using 24-inch lifts or less and will be compacted with equipment suitable for the soil type with the goal of reaching 90 percent of the maximum dry density. Stones will not be allowed to form clusters with voids. When backfill material is too dry for adequate compaction, water shall be added to the extent necessary to achieve compaction.

3.4.1.2. CONTAMINATED SOIL

Soil in which exhibits the presence of free-phase petroleum hydrocarbons, oil-staining, sheen exceeding field screening criteria, or elevated field measured organic vapor will be considered contaminated and will be transferred to a permitted landfill for disposal. Petroleum contaminated soil generated from the saturated zone will be allowed to drain until a representative sample from the pile passes the PFLT.

If requested by the receiving landfill, representative soil samples will be obtained at the frequency determined by the receiving landfill, and submitted to a contracted laboratory with a quick turnaround time for one or more of the following chemical analyses:

- VOCs by EPA Method 8260;
- SVOCs by EPA Method 8270/SIM;

- PCBs by EPA Method 8082;
- RCRA metals including arsenic, barium, cadmium, chromium, lead, mercury, selenium and silver by EPA Method 6000/7000 series; and/or
- TCLP by EPA Method 1311.

3.4.1.3. FINAL EXCAVATION LIMIT

Soil samples will be obtained from the base of the final excavation limit on a grid pattern with grid cells measuring approximately 150 feet (along the plume length) by approximately 100 feet (along the plume width). For the excavation sidewalls, one soil sample will be collected approximately every 300 horizontal feet of sidewall at a depth either similar to the documented presence of Site contaminants or at the approximate midpoint between the base of the excavation and the ground surface. The anticipated locations for base and sidewall samples based on the maximum expected limits of excavation are shown on Figure B-2.

Samples will be direct grab samples, or, depending on stability of the excavation and access to the selected sample location, may be collected from the bucket of the backhoe performing the excavation. Samples will be collected at a depth of approximately 2 to 6 inches into the exposed surface and containerized as specified by the laboratory with the sample location, date, time and depth documented. Soil samples will be placed in placed on ice for transport to the analytical laboratory. Soil samples will be submitted to a chemical analytical laboratory for the following chemical analyses:

- Diesel- and heavy oil-range petroleum hydrocarbons by Ecology Method NWTPH-Dx;
- VOCs by EPA Method 8260;
- SVOCs by EPA Method 8270/SIM;
- PCBs by EPA Method 8082; and
- Metals including antimony, arsenic, barium, beryllium, cobalt, Iron, lead, manganese and mercury by EPA Method 6000/7000 series.

3.4.2. Imported Fill Material

Representative soil samples will be obtained from each source that will be used for importing fill material. A representative soil sample will be obtained from the imported fill material source to determine the maximum dry density using a modified proctor test by ASTM method D1557. In addition, a representative soil sample will also be submitted to a chemical analytical laboratory with a quick turnaround time for the following chemical analyses:

- VOCs by EPA Method 8260;
- SVOCs by EPA Method 8270/SIM;
- PCBs by EPA Method 8082; and
- RCRA metals including arsenic, barium, cadmium, chromium, lead, mercury, selenium and silver by EPA Method 6000/7000 series.

Fill material will be placed in the excavation using 24-inch lifts or less and will be compacted with equipment suitable for the soil type. At least one field density test for approximately every three lifts will be taken using ASTM Method D2942 (nuclear density gauge). Stones will not be allowed to form clusters with voids. When backfill material is too dry for adequate compaction, water shall be added to the extent necessary to achieve 90 percent compaction relative to the maximum density.

3.4.3. Surface water

Field measurements of pH, electric conductivity, turbidity, dissolved oxygen and temperature will be obtained on a weekly basis during excavation and/or active waste water discharge and on a daily basis during shoreline excavation activities. Field parameters will be measured from grab samples collected from the anticipated upstream and downstream sampling locations shown on Figure B-2. A Hanna Instruments multi-parameter meter or similar will be used for documenting pH, electric conductivity, dissolved oxygen and temperature. A Lamotte turbidimeter or similar will be used to document turbidity. Procedures for measuring field parameters will be in general accordance with the manufacturer's instructions.

3.4.4. Air

Daily targeted air monitoring samples will be collected at the project boundary during excavation activities for particulate matter at upwind and downwind locations using an AeroTrak Handheld Particle Counter or similar. Procedures for measuring field parameters will be in general accordance with the manufacturer's instructions.

3.4.5. Excavation Water Treatment and Associated Product

3.4.5.1. STARTUP TESTING

Influent and effluent water samples will be obtained from water treatment system during initial startup. Representative grab samples will be obtained from water entering the treatment system (pre-treatment/influent sample) and from water exiting the treatment system (post-treatment/effluent sample) through inline sampling ports in approximately 10,000 gallons batches until a total of 50,000 gallons of water has been processed. Influent and effluent samples will be submitted to a chemical analytical laboratory with a quick turnaround for the following:

- Diesel- and heavy oil-range petroleum hydrocarbons by Ecology Method NWTPH-Dx;
- SVOCs including benzo[a]anthracene, benzo[a]pyrene, benzo[b]fluoranthene, benzo[k]fluoranthene, bis[2-ethylhexyl]phthalate, chrysene, and n-nitrosodiphenylamine by EPA Method 8270/SIM;
- PCBs by EPA Method 8082; and
- Metals including arsenic, cadmium, copper, lead, mercury, thallium, and zinc by EPA Method 200.7/200.8/7470A/7471B.

3.4.5.2. OPERATIONAL TESTING

Influent and effluent samples will be obtained on a weekly basis during operation to monitor the discharge concentrations. Grab samples will be collected and submitted to a chemical analytical laboratory with a quick turnaround for the following:

- Diesel- and heavy oil-range petroleum hydrocarbons by Ecology Method NWTPH-Dx;
- SVOCs including benzo[a]anthracene, benzo[a]pyrene, benzo[b]fluoranthene, benzo[k]fluoranthene, bis[2-ethylhexyl]phthalate, chrysene, and n-nitrosodiphenylamine by EPA Method 8270/SIM;
- PCBs by EPA Method 8082; and
- Metals including arsenic, cadmium, copper, lead, mercury, thallium, and zinc by EPA Method 200.7/200.8/7470A/7471B.

A water sample will also be obtained on a weekly basis between the primary and secondary GAC vessels during operation to monitor contaminant breakthrough. Grab samples will be collected and submitted to a chemical analytical laboratory with a quick turnaround for the following:

- Diesel- and heavy oil-range petroleum hydrocarbons by Ecology Method NWTPH-Dx; and
- SVOCs including benzo[a]anthracene, benzo[a]pyrene, benzo[b]fluoranthene, benzo[k]fluoranthene, bis[2-ethylhexyl]phthalate, chrysene, and n-nitrosodiphenylamine by EPA Method 8270/SIM.

The samples collected between the GAC vessels will only be analyzed for these analytes because it is expected that SVOCs will be the first contaminants to achieve breakthrough, and petroleum hydrocarbons are the primary COC at the Site.

3.4.5.3. PRODUCT SAMPLES

Representative grab sample(s) will be collected from the treated water system recovered product and analyzed for the parameters required by the disposal facility at a chemical analytical laboratory. The actual quantity of samples will be determined based on the volume of product collected and the requirements of the disposal facility.

3.4.6. Groundwater

Following completion of the removal action, an estimated 4 to 5 monitoring wells will be installed in and around the excavation area to evaluate groundwater conditions at the Site. Grab samples will be collected from these wells following completion of the removal action. The frequency of monitoring will be developed in consultation with EPA.

Collected grab samples will be submitted to a chemical analytical laboratory with a standard turnaround for the following:

- Diesel- and heavy oil-range petroleum hydrocarbons by Ecology Method NWTPH-Dx;
- VOCs by EPA Method 8260;
- SVOCs by EPA Method 8270/SIM;

- PCBs by EPA Method 8082; and
- Metals including antimony, arsenic, barium, beryllium, cobalt, iron, lead, manganese and mercury by EPA Method 6000/7000 series.

4.0 APPLICABILITY OF THE DATA

4.1.1. Definitive Data

Definitive data is analytical data of sufficient quality for final decision-making. The objectives, procedures, organization, and specific quality assurance (QA) and quality control (QC) activities designed to achieve definitive data for the project is presented in the QAPP.

All chemical analytical data provided by fixed laboratories will be considered definitive data for the following:

- Final excavation limit soil samples;
- Stockpile soil samples;
- Imported fill material soil samples;
- Water treatment system influent and effluent water samples;
- Water treatment system water samples between the primary and secondary GAC vessels; and
- Post-removal action groundwater samples.

4.1.2. Screening Data with Definitive Confirmation

Screening data with definitive confirmation is analytical data that may be used to support preliminary or intermediate decision-making until confirmed by definitive data. Screening data with definitive confirmation will not be collected for the removal action.

4.1.3. Screening Data

Screening data is analytical data which has not been confirmed by definitive data. This data can be used for making decisions: 1) in emergencies, 2) for health and safety screening, 3) to supplement other analytical data, 4) to determine where to collect samples, 5) for waste profiling, and 6) for preliminary identification of pollutants. However, this data is not of sufficient quality for final decision making.

All data obtained from field instruments and/or visual observations will be considered screening data. Field instrument will be used for measuring surface water quality parameters, air particulate matter and soil density. Field screening methods, including water sheen screening, visual observations and headspace vapor measurements using a PID will be used to evaluate the presence of petroleum contamination (i.e., free-phase petroleum hydrocarbons, oil-staining, sheen, or field measured organic vapor).

4.2. Special Sampling or Analysis Directions

Special sampling and analysis methods are described in the QAPP.

4.3. Method Requirements

The goal of the analytical methods is to achieve practical quantitation limits (PQLs) lower than the Site screening levels. However, commercially available laboratory analyses may not be able to achieve PQLs for all chemicals that are lower than screening levels. If commercially available laboratory analyses are not be able to achieve a PQL lower than the screening level for a specific chemical, then the PQL will become the screening level.

4.4. Sample Collection Information

Sample collection procedures to be utilized as part of this investigation including field documentation, sample labeling, packaging and shipment, and sampling equipment maintenance, calibration and decontamination are presented in the QAPP.

5.0 ASSESSMENT AND RESPONSE

5.1. Project Discrepancies

Project discrepancies will be noted in field notes. The final report that is prepared will contain the reason for any discrepancies, and an assessment of the extent to which the discrepancies affect the usability of the data. The QAPP contains additional detail regarding documentation of project discrepancies.

6.0 DATA VALIDATION AND USABILITY

Data generated by laboratory analysis will be provided in an electronic data deliverable (EDD) as well as hard copy. The EDD will be used for data tabulation and presentation as well as data review and validation that will be presented in the investigation report. Data validation will be performed as detailed in the QAPP.

7.0 LIMITATIONS

We have prepared this Site Specific Sampling Plan for use by the Potlatch Land and Lumber during the removal action at the Avery Landing Site. Within the limitations of scope, schedule and budget, our services have been executed in accordance with generally accepted environmental science practices in this area at the time this report was prepared. No warranty or other conditions, express or implied, should be understood.

Any electronic form, facsimile or hard copy of the original document (email, text, table, and/or figure), if provided, and any attachments are only a copy of the original document. The original document is stored by GeoEngineers, Inc. and will serve as the official document of record.

8.0 REFERENCES

E & E (Ecology and Environment, Inc.), "Draft Final Engineering Evaluation /Cost Analysis, Avery Landing Site, Avery, Idaho," prepared for the United States Environmental Protection Agency, Region 10, dated December 2010.

GeoEngineers, Inc., "Draft Removal Action Work Plan, Avery Landing Site, Avery, Idaho." GEI File No. 2315-016-02, Prepared for United States Environmental Protection Agency on Behalf of the Potlatch Land and Lumber, dated March 4, 2013.

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Golder Associates, Inc., (Golder), "Final Engineering Evaluation /Cost Analysis Work Plan for the Avery Landing Site, Avery, Idaho," Prepared for the Potlatch Forest Products Corporation, dated January 23, 2009.

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United States Environmental Protection Agency (EPA), Hazardous Waste Test Methods: Method 9095 Paint Filter Test, 2012. http://www.epa.gov/osw/hazard/testmethods/sw846/online/9_series.htm.

Table B-1

Sampling and Analysis Plan

Avery Landing Site
Avery, Idaho

Data Quality	Sampling Area	Matrix	Sample Pattern	Sample Type	Data Applicability	Analyte/ Parameter	Method	Action Level	Method Quantitation Limit
Field Analysis	Soil Excavation (Overburden)	Soil	Targeted	Grab	Screening	• Water Sheen Test • Visual Observation • Headspace Vapor (PID)	N/A	• Rainbow Sheen • Visual Petroleum Staining • >20 ppm (PID)	• N/A • N/A • 1 ppm
Field Analysis	Excavated Soil (Contaminated)	Soil	Targeted	Grab	Screening	• Water Sheen Test • Visual Observation • Headspace Vapor (PID)	N/A	• Rainbow Sheen • Visual Petroleum Staining • >20 ppm (PID)	• N/A • N/A • 1 ppm
Field Analysis	Excavated Soil (Contaminated)	Soil	Targeted	Grab	Screening	Paint Filter Test	EPA 9095	Presence of free liquid	N/A
Lab Analysis	Excavated Soil (Contaminated)	Soil	Targeted	Grab	Definitive	• SVOCs • VOCs • PCBs • Metals • TCLP	• EPA 8270/SIM • EPA 8260 • EPA 8082 • EPA 6000/7000 series • EPA 1311	• N/A • N/A • TSCA[1] • 20 Times Rule[2] • Dangerous Waste[3]	See QAPP
Field Analysis	Import Fill Material	Soil	Targeted	Grab	Screening	• Water Sheen Test • Visual Observation • Petroleum Odor • Headspace Vapor (PID)	N/A	• Rainbow Sheen • Visual Petroleum Staining • Petroleum Odor in Breathing Zone • >20 ppm (PID)	• N/A • N/A • N/A • 1 ppm
Lab Analysis	Import Fill Material	Soil	Targeted	Grab	Definitive	• SVOCs • VOCs • PCBs • RCRA Metals	• EPA 8270/SIM • EPA 8260 • EPA 8082 • EPA 6000/7000 series	See Table 3	See QAPP
Lab Analysis	Import Fill Material	Soil	Targeted	Grab	Screening	Modified Proctor Test	ASTM D1557	N/A	N/A
Field Analysis	Import Fill Material	Soil	Targeted	Grab	Screening	Soil Density Test	ASTM D2942	<90% Maximum Relative Dry Density	1%
Field Analysis	St. Joe River	Water	Targeted	Grab	Screening	• pH • Electric Conductivity • Turbidity • Dissolved Oxygen • Temperature	N/A	±10% of Upstream Measurement	• 0.1 • 0.1 S/m • 1 NTU • 0.1 ppm • 0.1 °C
Field Analysis	Site Perimeter	Air	Targeted	Grab	Screening	Particulate Matter	N/A	>2x Upwind Measurement	0.01 mg/m^3
Lab Analysis	Treated Water	Water	Targeted	Grab	Definitive	• Diesel and Heavy Oil • SVOCs • PCBs • Metals	• NWTPH-Dx • EPA 8270/SIM • EPA 8082 • EPA	See Table 2	See QAPP
Lab Analysis	Recovered Product	Product	Targeted	Grab	Definitive	To Be Determined by the Disposal Facility	To Be Determined	To Be Determined	To Be Determined
Lab Analysis	Final Excavation Limit	Soil	Targeted	Grab	Definitive	• Diesel and Heavy Oil • SVOCs • VOCs • PCBs • Metals	• NWTPH-Dx • EPA 8270/SIM • EPA 8260 • EPA 8082 • EPA 6000/7000 series	N/A	See QAPP

Data Quality	Sampling Area	Matrix	Sample Pattern	Sample Type	Data Applicability	Analyte/ Parameter	Method	Action Level	Method Quantitation Limit
Lab Analysis	Groundwater	Water	Targeted	Grab	Definitive	● Diesel and Heavy Oil ● SVOCs ● VOCs ● PCBs ● Metals	● NWTPH-Dx ● EPA 8270/SIM ● EPA 8260 ● EPA 8082 ● EPA 6000/7000 series	N/A	See QAPP

Notes:

[1] Soil in which PCBs are detected at a concentration of 50 mg/kg or greater will be managed and handled as a TSCA waste.

2 Soil samples will be analyzed using TCLP for metals if the detected concentration exceed the 20 times trigger value (i.e. 100 mg/kg for arsenic, 2,000 mg/kg for barium, 20 mg/kg for cadmium, 100 mg/kg for chromium, 4 mg/kg for mercury, 20 mg/kg for selenium, and 100 mg/kg for silver).

[3] Soil in which TCLP arsenic, barium, cadmium, chromium, lead, mercury, selenium and silver are detected at a concentration of 5 mg/L, 100 mg/L, 1 mg/L, 5 mg/L, 5.0 mg/L, 0.2 mg/L, 1 mg/L and 5 mg/L, respectively, will be managed and handled as a federal dangerous waste.

PID = Photoionization Detector

ppm = parrts per million

ASTM = American Society for Testing and Materials

EPA = Environmental Protection Agency

SVOCs = Semivolatile Organic Compounds

VOCs = Volatile Organic Compounds

PCBs = Polychlorinated Biphenyls

TCLP = Toxicity Characteristic Leaching Procedure

TSCA = Toxic Substances Control Act

QAPP = Quality Assurance Project Plan

RCRA = Resource Conservation and Recovery Act

Table B-2

Water Treatment System Effluent Discharge Limits

Avery Landing Site
Avery, Idaho

Analyte	CAS No.	Analytical Method	Discharge Limit[1] (µg/L)	Limit Type	Sample Type
Metals					
Arsenic	7440-38-2	EPA 200.7/200.8	10	Daily Maximum	Grab
Cadmium	7440-43-9	EPA 200.7/200.8	0.6	Daily Maximum	Grab
Copper	7440-50-8	EPA 200.7/200.8	11	Daily Maximum	Grab
Lead	7439-92-1	EPA 200.7/200.8	2.5	Daily Maximum	Grab
Mercury	7439-97-6	EPA 7470A/7471B	0.012	Daily Maximum	Grab
Thallium	7440-28-0	EPA 200.7/200.8	0.24	Daily Maximum	Grab
Zinc	7440-66-6	EPA 200.7/200.8	120	Daily Maximum	Grab
Petroleum Hydrocarbons					
Diesel-Range	68334-30-5	NWTPH-DX	5,000	Daily Maximum	Grab
Heavy Oil-Range	30109	NWTPH-DX	5,000	Daily Maximum	Grab
Semivolatile Organic Compounds (SVOCs)					
bis(2-Ethylhexyl)phthalate	117-81-7	EPA 8270	1.2	Daily Maximum	Grab
n-Nitrosodiphenylamine	86-30-6	EPA 8270	3.3	Daily Maximum	Grab
Carcinogenic Polycyclic Aromatic Hydrocarbons (cPAHs)					
Benzo[a]anthracene	56-55-3	EPA 8270 SIM	0.0038	Daily Maximum	Grab
Benzo[a]pyrene	50-32-8	EPA 8270 SIM	0.0038	Daily Maximum	Grab
Benzo[b]fluoranthene	205-99-2	EPA 8270 SIM	0.0038	Daily Maximum	Grab
Benzo[k]fluoranthene	207-08-9	EPA 8270 SIM	0.0038	Daily Maximum	Grab
Chrysene	218-01-9	EPA 8270 SIM	1.2	Daily Maximum	Grab
Polychlorinated Biphenyls (PCBs)					
Total PCBs (sum of Aroclors)	1336-36-3	EPA 8082	0.000064	Daily Maximum	Grab

Notes:

[1]Or lowest obtainable analytical detection level. Discharge criterial referenced from Idaho Administrative Code 58.01.02.

EPA = Environmental Protection Agency

µg/L = micrograms per liter

Table B-3

Import Fill Material Chemical Criteria

Avery Landing Site
Avery, Idaho

Analyte	CAS No.	Analytical Method	Screening Level[1] (mg/kg)
Metals			
Arsenic	7440-38-2	EPA 6000/7000 series	0.39
Barium	7440-39-3	EPA 6000/7000 series	896
Cadmium	7440-43-9	EPA 6000/7000 series	1.4
Chromium	7440-47-3	EPA 6000/7000 series	2,135[4]
Lead	7439-92-1	EPA 6000/7000 series	50
Mercury	7439-97-6	EPA 6000/7000 series	0.0051
Selenium	7782-49-2	EPA 6000/7000 series	2.0
Silver	7440-22-4	EPA 6000/7000 series	0.19
Volatile Organic Compounds (VOCs)			
1,2,4-Trimethylbenzene	95-63-6	EPA 8260	0.19
1,2-Dichlorobenzene	95-50-1	EPA 8260	5.3
1,3,5-Trimethylbenzene	108-67-8	EPA 8260	0.15
1,4-Dichlorobenzene	106-46-7	EPA 8260	0.076
4-Isopropyltoluene	99-87-6	EPA 8260	NE
Benzene	9072-35-9	EPA 8260	0.018
cis-1,2-Dichloroethene	156-59-2	EPA 8260	0.19
Ethylbenzene	100-41-4	EPA 8260	10
Isopropylbenzene	98-82-8	EPA 8260	3.5
Methylene Chloride	75-09-2	EPA 8260	0.017
m-Xylene & p-Xylene	108-38-3 & 106-42-3	EPA 8260	1.7[2]
n-Butylbenzene	104-51-8	EPA 8260	1.2
N-Propylbenzene	103-65-1	EPA 8260	NE
o-Xylene	95-47-6	EPA 8260	1.7[2]
sec-Butylbenzene	135-98-8	EPA 8260	1.2
tert-Butylbenzene	98-06-6	EPA 8260	0.85
Toluene	108-88-3	EPA 8260	4.9
Trichloroethene	79-01-6	EPA 8260	0.0029
2-Butanone	78-93-3	EPA 8260	12
2-Hexanone	193818-72-3	EPA 8260	NE
Acetone	67-64-1	EPA 8260	17
Carbon disulfide	75-15-0	EPA 8260	6.0
Chlorobenzene	68411-45-0	EPA 8260	0.62
Styrene	9003-53-6	EPA 8260	1.8
Carcinogenic Polycyclic Aromatic Hydrocarbons (cPAHs)			
Benzo(a)anthracene	56-55-3	EPA 8270 SIM	0.42

Analyte	CAS No.	Analytical Method	Screening Level[1] (mg/kg)
Benzo(a)pyrene	50-32-8	EPA 8270 SIM	0.042
Benzo(b)fluoranthene	205-99-2	EPA 8270 SIM	0.42
Benzo(k)fluoranthene	207-08-9	EPA 8270 SIM	4.2
Chrysene	218-01-9	EPA 8270 SIM	33
Dibenzo(a,h)anthracene	53-70-3	EPA 8270 SIM	0.042
Indeno(1,2,3-cd)pyrene	193-39-5	EPA 8270 SIM	0.42
Non-Carcinogenic Polycyclic Aromatic Hydrocarbons (PAHs)			
1-Methylnaphthalene	90-12-0	EPA 8270 SIM	22
2-Methylnaphthalene	91-57-6	EPA 8270 SIM	3.3
Acenaphthene	83-32-9	EPA 8270 SIM	52
Acenaphthylene	208-96-8	EPA 8270 SIM	78
Anthracene	120-12-7	EPA 8270 SIM	1,040
Benzo(g,h,i)perylene	191-24-2	EPA 8270 SIM	1,178
Fluoranthene	206-44-0	EPA 8270 SIM	364
Fluorene	86-73-7	EPA 8270 SIM	55
Naphthalene	91-20-3	EPA 8270 SIM	1.1
Phenanthrene	85-01-8	EPA 8270 SIM	79
Pyrene	129-00-0	EPA 8270 SIM	359
Semivolatile Organic Compounds (SVOCs)			
2-Chloronaphthalene	91-58-7	EPA 8270	128
2-Methylphenol	95-48-7	EPA 8270	1.8[3]
3 & 4 Methylphenol	106-44-5	EPA 8270	0.14
4-Nitroaniline	100-01-6	EPA 8270	0.0030
Bis(2-chloroethoxy)methane	111-91-1	EPA 8270	NE
Bis(2-ethylhexyl)phthalate	117-81-7	EPA 8270	12
Butyl benzyl phthalate	85-68-7	EPA 8270	511
Carbazole	86-74-8	EPA 8270	NE
Dibenzofuran	132-64-9	EPA 8270	6.1
Diethylphthalate	84-66-2	EPA 8270	28
Di-n-butyl phthalate	84-74-2	EPA 8270	31
Di-n-octyl phthalate	117-84-0	EPA 8270	1,829
Phenol	13127-88-3	EPA 8270	7.4
Semivolatile Organic Compounds (SVOCs)			
Total PCBs (sum of Aroclors)	1336-36-3	EPA 8082	0.15

Notes:

[1] Or lowest obtainable analytical detection level. Values referenced from December 2010 Draft Final Engineering Evaluation/Cost Estimate (E&E, 2010).

[2] Value for total xylenes

[3] Value is for 4-methylphenol

[4] Value for Chromium (III) Total

mg/kg = milligram per kilogram

EPA = Environmental Protection Agency

NE = not established

N
W E
S

10 0 10

Miles

Notes:
1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. can not guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.
3. It is unlawful to copy or reproduce all or any part thereof, whether for personal use or resale, without permission.

Data Sources: ESRI Data & Maps

Projection: NAD 1983 UTM Zone 11N

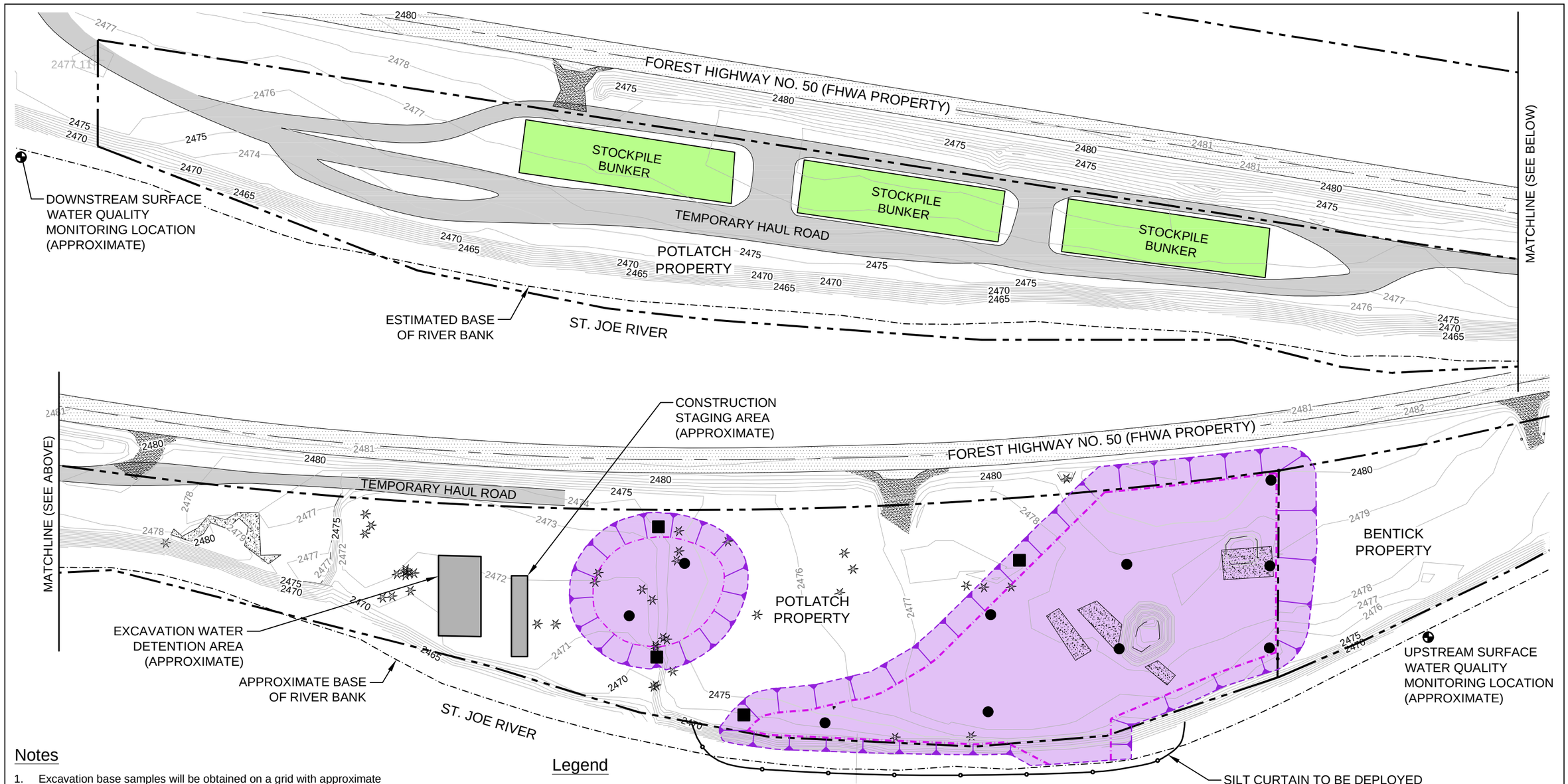
Vicinity Map

Avery Landing Site
Avery, Idaho

GeoEngineers

Figure B-1

Path: \\sea\Projects\2\2315016\GIS\231501602_VicinityMap.mxd Map Revised: 14 December 2012 amanza



Notes

1. Excavation base samples will be obtained on a grid with approximate intervals consisting of 150 feet (along plume length) by 100 feet (along plume width).
2. Excavation sidewalls samples will be obtained at approximately every 300 linear feet.
3. The locations of all features shown are approximate.
4. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. cannot guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.

Reference: Existing topographic contours, property boundaries, site features including concrete, existing trees, and other miscellaneous features shown on this figure are based on Meckel Engineering & Surveying survey file dated May 24, 2012 and September 25, 2012.

Legend

- Property Line
- 2480 — Existing Topographic Contours (Feet - NAVD 88)
- Maximum Expected Limits of Remedial Excavation (Top of Slope)
- Expected Base of Remedial Excavation
- Existing Trees
- Excavation Base Samples (See Note 1)
- Excavation Sidewall Samples (See Note 2)

N W E S

100 0 100
FEET

Remedial Action Sampling Plan

Avery Landing Site
Avery, Idaho

GeoEngineers

Figure B-2

P:\2\23150\02\CAD\SSSP\23150602 SSSP Fig B-2 Remedial Action Sampling Plan.dwg\TAB:LANDSCAPE modified by tmichaud on Feb 21, 2013 - 14:27

APPENDIX C
Quality Assurance Project Plan

Quality Assurance Project Plan

Avery Landing Site
Avery, Idaho

for
U.S. Environmental Protection Agency on Behalf of Potlatch Land and Lumber

March 4, 2013

GeoEngineers

Plaza 600 Building
600 Stewart Street, Suite 1700
Seattle, Washington 98101
206.728.2674

Quality Assurance Project Plan

Avery Landing Site
Avery, Idaho

File No. 2315-017-02

March 4, 2013

Approved By:

Signature: _____ Date: _____

John M. Herzog, PhD, Principal, GeoEngineers

Signature: _____ Date: _____

Robert S. Trahan, Environmental Geologist, GeoEngineers

Signature: _____ Date: _____

Mark J. Lybeer, Quality Assurance Leader, GeoEngineers

Signature: _____ Date: _____

Earl Liverman, Federal On-Scene Coordinator, EPA

RST:JMH:csv

GeoEngineers

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LIST OF TABLES

1.0 INTRODUCTION

This document presents the Quality Assurance Project Plan (QAPP) for the environmental sampling activities to be completed as part of the Avery Landing Site (Site) removal action. The Site is located approximately one mile west of Avery, Idaho. This QAPP is to be used in conjunction with the Site Specific Sampling Plan (SSSP) which is presented in Attachment B of the Avery Landing Removal Action Work Plan (Work Plan; GeoEngineers, 2013). The information contained in this QAPP is based on information available at the time of preparation. This QAPP may be updated as additional information becomes available.

The QAPP and associated SSSP were prepared in general accordance with the requirements of 40 CFR 300.415(b)(4)(ii), EPA's Requirements for Quality Assurance Project Plans (EPA, 2001) and EPA's Guidance for Quality Assurance Project Plans (EPA, 2002).

2.0 PROJECT MANAGEMENT AND ORGANIZATION

The project management and organization elements of the QAPP as detailed below address the basic area of project management including the roles and responsibilities of the participants, the project description, quality objectives and criteria, special training/certification and documents and records.

2.1. Project Organization and Responsibilities

Key individuals and positions providing quality assurance (QA) and quality control (QC) are summarized in the following table. A description of the responsibilities, lines of authority and communication for the key individuals and positions providing QA and QC is presented in Sections 2.1.1 through 2.1.8. This element of the plan ensures that the each key project participant has a defined role.

Project Role	**Name** **Organization**	**Telephone** **Email** **Address**
Regulatory Project Manager/ On-Scene Coordinator	Earl Liverman EPA	208.664.4858 Liverman.earl@epamail.epa.gov Coeur d'Alene Field Office 1910 Northwest Boulevard, Suite 208 Coeur d'Alene, Idaho 83814
Potlatch Project Manager	Terry Cundy Potlatch	208-301-0410 Terry.Cundy@potlatchcorp.com 530 S. Asbury, Suite 4 Moscow, Idaho 83843
Technical Project Manager	John Herzog GeoEngineers	206.406.6431 jherzog@geoengineers.com 600 Stewart Street, Suite 1700 Seattle, Washington 98101

Project Role	Name Organization	Telephone Email Address
Task Manager/Field Coordinator	Robert Trahan GeoEngineers	206.239.3253 rtrahan@geoengineers.com 600 Stewart Street, Suite 1700 Seattle, Washington 98101
Health and Safety Manger	Wayne Adams GeoEngineers	206.239.3253 wadams@geoengineers.com 1101 Fawcett Avenue, Suite 200 Tacoma, Washington 98402
Quality Assurance Leader	Mark Lybeer GeoEngineers	206.278.2674 mlybeer@geoengineers.com 600 Stewart Street, Suite 1700 Seattle, Washington 98101
Laboratory Project Manager	Randee Decker Test America	509.924.9200 rdecker@testamerica.com 11922 E 1st Avenue Spokane, WA 99206

2.1.1. Regulatory Project Manager and Federal On-Scene Coordinator

The Regulatory Project Manager is responsible for overseeing the implementation of the work to be performed under the Administrative Settlement Agreement and Order on Consent. The Regulatory Project Manager will review and approve the QAPP and subsequent revisions and amendments.

2.1.2. Potlatch Project Manager

The Potlatch Project Manager's duties consist of implementing the project approach and tasks, overseeing the project team members during performance of project tasks.

2.1.3. Technical Project Manager

The Technical Project Manager is responsible for fulfilling contractual and administrative control of the project. The Technical Project Manager's duties include defining the project approach and tasks, selecting project team members and establishing budgets and schedules.

The Technical Project Manager's duties also include implementing the project approach and tasks, overseeing project team members during performance of project tasks, adhering to and communicating the status of budgets and schedules to the Potlatch Project Manager, providing technical oversight, and providing overall production and review of project deliverables. The Technical Project Manager shall maintain the official, approved SSSP/QAPP and shall be responsible for distributing updated documents to the recipients listed in Section 2.1.

2.1.4. Task Manager

The individual task managers are responsible for the daily management of project tasks including providing technical direction to the field staff, produces task specific documents including the Quality Assurance Project Plan (QAPP), Site Specific Sampling Plan (SSSP), and Health and Safety Plan (HASP), develops schedules and allocates resources for field tasks, coordinates data collection activities to be consistent with information requirements, supervises the compilation of field data and laboratory analytical results, assures that data are correctly and completely reported, implements and oversees field sampling in accordance with project plan and supervises field personnel. Additionally, the Task Manger coordinates work with on-site subcontractors, verifies that appropriate sampling, testing, and measurement procedures are followed, coordinates the transfer of field data, sample tracking forms, and log books to the Project Manager for data reduction and validation, and participates in QA corrective actions as required.

2.1.5. Field Coordinator

The Field Coordinator will lead the field sampling effort for the project, serving as the direct point of contact between the Task Manager, analytical laboratory, and subcontractors and ensures that the appropriate sampling containers, chain-of-custody (COC) forms and field sampling gear including personal protective equipment (PPE) are available. The Field Coordinator is to ensure that data collection activities are consistent with information requirements and to assure that field information is correctly and completely reported for the entire duration of the project. The Field Coordinator will also coordinate appropriate sampling, testing, and measurement procedures and schedule sample delivery/shipment with the analytical laboratory. The Field Coordinator will transfer field data and sample tracking forms to the project file and data reduction and validation and participate in QA corrective actions as required.

2.1.6. Technical/Field Staff

Technical/Field Staff have the primary responsibility for duties involve field data collection and documentation. Technical/Field Staff are responsible for:

- Understanding and following the QAPP and SSSP.
- Checking all equipment and supplies in advance of field operations.
- Ensuring that samples are properly collected, preserved, labeled, packaged, and shipped.
- Ensuring that all field data are carefully recorded and preserved according to the QAPP and SSSP.
- Following chain-of-custody procedures and standard operating procedures when they are required.

2.1.7. Quality Assurance Leader

The Quality Assurance Leader will provide oversight required for the completion of sample analyses for the project and verify, in conjunction with the laboratory manager, that the analytical work is proceeding in accordance with internal laboratory standard practices and the QA/QC guidelines for the project. This person will also oversee completion of data validation activities completed for this

project. The Quality Assurance Leader maintains independence from the individual(s) generating the data.

2.1.8. Health and Safety Manager

The Health and Safety Manager will oversee implementation of health and safety programs and verify that work on the project proceeds in accordance with the site-specific HASP.

2.1.9. Laboratory Project Manager

The Laboratory Project Manager will fulfill the analytical requirements of this project including being responsible for sample analyses using appropriate analytical laboratory methods. The specific procedures to be used for COC transfer, internal calibrations, laboratory analyses, reporting, preventive instrument maintenance, and corrective action will follow standard protocols.

2.2. Problem Definition and Background

Detailed information regarding historical operations, previous environmental investigations, regulatory history and previous cleanup actions are presented in the Engineering Evaluation/Cost Analysis (EE/CA) Work Plan prepared by Golder and Associates (Golder, 2009) for Potlatch, Draft Final EE/CA report prepared by Ecology and Environment for EPA (E&E, 2010) and Supplemental Investigation Report (GeoEngineers, 2011). Site history, results of previous investigations and current conditions are summarized below.

2.2.1. Background Information

Detailed information regarding Site and operational history, previous investigations and regulatory history and cleanup actions are presented in EPA's EE/CA (E&E, 2010) and/or Supplemental Investigation Report (GeoEngineers, 2011) and are summarized in the Work Plan.

2.2.2. Problem Statement

As a result of the continued presence of petroleum seeps and sheen in the St. Joe River, the Site is subject to cleanup. Pursuant to the Action Memorandum for the Avery Landing Site (EPA, 2011), and agreements with EPA, Potlatch will perform removal actions followed by post-removal action groundwater monitoring to monitor natural attenuation of Site contaminants.

2.3. Project and Task Description

2.3.1. Project Description

In accordance with the EE/CA (E&E, 2010) the selected removal action involves the excavation and removal of subsurface soil contaminated with petroleum hydrocarbons (diesel and heavy oil). Removal of this material is expected to significantly reduce or eliminate the source and prevent the continued discharge of petroleum hydrocarbons and hazardous substances into the St. Joe River. Residual contamination remaining at the Site will attenuate by way of natural processes over-time and the progress of these processes will be monitored.

During the summer/fall of 2012, EPA performed cleanup activities on the parts of the Site owned by Larry and Ethel Bentcik (Bentcik), the United States administered by the Federal Highway Administration (FHWA), the Idaho Department of Lands (IDL), and Potlatch to remove materials

contaminated with petroleum hydrocarbons and CERCLA hazardous substances from the Site. Contaminated materials were excavated from property owned by Potlatch to address a portion of the St. Joe River shoreline where petroleum discharges were historically observed and to install stable side slope transitions between the Bentcik property and the FHWA property excavation areas and the Potlatch property.

Additional excavation activities will be performed by Potlatch in the summer/fall of 2013 to remove residual contamination remaining at the Site. The objectives of the removal action are to:

- Remove the remaining components of the product containment, collection, and extraction systems that were installed as part of the 1994 and 2000 removal actions;
- Remove soil exceeding field screening methods within the upland and river bank areas;
- Remove, treat, and/or manage petroleum product that is present as light Non-Aqueous Phase Liquids (LNAPL) on groundwater within the excavations;
- Dispose of waste streams in accordance with CERCLA's off-site rule requirements; and
- Restore portions of the Site affected by the removal action including river bank reconstruction, backfilling, compaction, grading and re-vegetation.

The design and approach for the removal action that will be performed by Potlatch are presented in the Work Plan.

2.3.2. Task Description

Sampling activities that will be conducted during the removal action will include collecting soil, treated water and post-removal action groundwater samples for chemical analysis at a contract laboratory. In addition, field screening of soil will be conducted to evaluate the presence of petroleum contamination during excavation, surface water monitoring will be conducted at locations upstream and downstream to evaluate potential impacts to the St. Joe River resulting from the removal action, and air monitoring for particulate matter will be conducted at locations upwind and downwind using field instruments to determine if Site activities are generating particulate concentrations that exceed applicable regulatory standards at the project boundary.

Specific details of the sampling activities that will be conducted during the removal action are presented in the SSSP (Appendix B of the Work Plan).

2.3.3. Project Schedule

Removal action activities being performed by Potlatch will be completed summer/fall of 2013. Post-removal action groundwater monitoring will be performed following completion of the removal action as approved by EPA. A schedule for mobilization/demobilization, sampling activities and reporting are presented in the Work Plan.

2.4. Quality Objectives and Criteria

2.4.1. Project Quality Objectives

Data quality objectives for sampling activities that will be performed for the removal action are presented in the SSSP (Appendix B of the Work Plan). The SSSP provides information about specific analytes, measurement objectives, method requirements and data uses for the removal action.

2.4.2. Chemical Data Quality Objectives

The quality assurance objectives for technical data are to collect environmental monitoring data of known, acceptable, and documentable quality. The QA objectives established for the project are:

- Implement the procedures outlined herein for field sampling, sample custody, equipment operation and calibration, laboratory analysis, and data reporting that will facilitate consistency and thoroughness of data generated.
- Achieve the acceptable level of confidence and quality required so that data generated are scientifically valid and of known and documented quality. This will be performed by establishing criteria for precision, accuracy, representativeness, completeness, and comparability, and by testing data against these criteria.

The sampling design, field procedures, laboratory procedures, and QC procedures are set up to provide high-quality data for use in this project. Specific data quality factors that may affect data usability include quantitative factors (bias, sensitivity, precision, accuracy, and completeness) and qualitative factors (representativeness and comparability). The measurement quality objectives (MQO) associated with these data quality factors are summarized in Table C-1 and are discussed below.

2.4.2.1. SENSITIVITY

The primary measurement quality objective for this project is to analyze for chemicals at Practical Quantitation Limits (PQLs) less than target reporting limits (TRLs). These limits are provided in Tables C-2 and C-3. In order to meet these TRLs, the laboratory will report the analyte concentrations detected at or above the Method detection Limits (MDLs) but less than Method Reporting Limits (MRL) as "estimated."

2.4.2.2. ACCURACY AND BIAS

Accuracy is a statistical measurement of correctness and includes components of random error (variability due to imprecision) and systemic error. It reflects the total error associated with a measurement. A measurement is accurate when the value reported does not differ from the true value or known concentration of the spike and standard. Analytical accuracy is measured by comparing the percent recovery of analytes or surrogates spiked into a sample or QC sample [matrix spike (MS), matrix spike duplicate (MSD) or laboratory control sample (LCS)] to the control limits listed in Table C-1. Accuracy is calculated using the following formula:

$$\%R = \frac{100(xs - xu)}{K}$$

Where: *%R* = percent recovery of spike (also known as matrix spike recovery [MSR]).

xs = measured value for spiked sample.

xu = measured value for unspiked sample.

K = known value of the spike in the sample.

Bias is a systemic or persistent distortion of a measurement process that causes errors in one direction. It usually is associated with the idea of obtaining data that will lead to a consistently "low" or consistently "high" concentration of a given target analyte.

2.4.2.3. PRECISION

Precision measures the reproducibility of the measurements calculated using the data generated in the analysis of laboratory duplicate samples. Each duplicate analysis will be recorded on the appropriate form, and the equations used to calculate the precision of data should be included. If the difference of the value between two duplicate samples exceeds the MQOs (Table C-1), then the precision should be judged to be out of control and the analyst should be instructed to confirm the source of the precision error. Once confirmed and remedied, the analysis will be rerun providing acceptable precision limits, and the data can then be reported.

Precision is measured using the relative percent difference (RPD) from pairs of duplicate measurements, calculated as follows:

$$\%RPD = \frac{100(d1 - d2)}{\left[\frac{d1 - d2}{2}\right]}$$

Where: *%RPD* = percent relative difference.

d1 and *d2* = the concentrations of the two measurements.

RPD can be calculated using duplicate analyses in the case where an analyte is detected. If an analyte is not detected, the RPD can be calculated from the percent recoveries of the matrix spike (MS) and matrix spike duplicate (MSD) analyses.

2.4.2.4. COMPLETENESS

Completeness is calculated for the aggregation of data for each analyte measured for any particular sampling event or other defined set of samples. Completeness is calculated and reported for each method, matrix, and analyte combination. The number of valid results divided by the number of possible individual analyte results, expressed as a percentage, determines the completeness of the data set. For completeness requirements, valid results are all results not rejected through data validation. For this project, the requirement for completeness is 90 percent (%).

The following equation is used to calculate completeness:

$$\%\ completeness = \frac{number\ of\ valid\ results\ \times 100}{number\ of\ possible\ results}$$

For instances when samples could not be analyzed (i.e., because of holding time violations for which re-sampling and analysis were not possible, samples that were spilled or broken, etc.), the numerator of this equation becomes the number of valid results minus the number of possible results not reported.

2.4.2.5. COMPARABILITY

Comparability is the qualitative term that expresses the measure of confidence that two data sets or batches can contribute to a common analysis and evaluation. Comparability with respect to laboratory analyses pertains to method type comparison, holding times, stability issues, and aspects of overall analytical quantitation. The following items are evaluated when assessing data comparability:

- Whether two data sets or batches contain the same set of parameters.
- Whether the units used for each data set are convertible to a common scale.
- Whether similar analytical procedures and quality assurance were used to collect data for both data sets.
- Whether the analytical instruments used for both data sets have approximately similar detection levels.
- Whether samples within data sets were selected and collected in a similar manner.

To ensure data comparability, standard sample collection and analytical methods/procedures will be used for this project.

2.4.2.6. REPRESENTATIVENESS

Representativeness expresses the degree to which data accurately and precisely represents a characteristic of a population, a process condition, an environmental condition, or parameter variations at a sampling point.

Representativeness is assessed by way of evaluating issues such as (but not limited to) sampling methods, analytical methods used, holding times, laboratory blanks, field blanks, COC records, detection limits, and sample dilutions. The field QA/QC procedures for sample handling, including COC records, will provide for sample integrity until the time of analysis. To make certain that the analytical results of this assessment are representative of the true field conditions, appropriate laboratory QA/QC procedures (as indicated in this QAPP) should be followed.

The degree to which the data are representative of the field conditions will be evaluated during the Quality Assurance Leader's review of the analytical data. The results of the validation review will be summarized in the Data Validation Report.

2.5. Special Training/Certifications

The Field Coordinator and field staff will be up-to-date on their Hazardous Waste Operations and Emergency Response (HAZWOPER) training and will be certified in cardiopulmonary resuscitation

(CPR) and first aid. This training is provided via online and in-class annual or biennial training. All field staff will be knowledgeable in and understand the proper technical protocols for collecting soil samples for all analytes including petroleum hydrocarbons, VOCs, SVOCs, PCBs and metals.

Records documenting HAZWOPER and CPR/First Aid certifications are documented in the Site Health and Safety Plan (HASP) presented in Appendix D of the Work Plan and are also kept by the Health and Safety Manager.

2.6. Documentation and Records

The approved final SSSP/QAPP will be maintained in electronic format by the Project Manager, in Microsoft Word© format and in an Adobe portable document format (PDF). One hard copy of the SSSP/QAPP will be utilized by field staff to ensure consistency with protocols.

The following documents will be produced during the removal action construction:

- Daily field report that documents field sampling activities will be performed by the field staff and maintained in both electronic and hard copy formats. The field report will include information on field forms or in the field notebook including daily activities, field screening results, samples collected, and surface water quality and air particulate monitoring results. Other information included in the field report is listed in Section 3.4.

Records will be retained by GeoEngineers, Inc. in hard copy and in electronic Microsoft Word and/or PDF format for at least 10 years. Electronic data is backed up daily in-office and also sent to a centralized data center for off-site storage.

Individuals identified in Section 2.1 will receive updated versions of the SSSP/QAPP electronically (via email with attached PDF). The Technical Project Manager will distribute the updated documents as they become available.

3.0 DATA GENERATION AND ACQUISITION

The data generation and acquisition elements of the QAPP (as detailed below) address aspects of the project design and implementation including the appropriate methods for sampling, measurement and analysis, data collection or generation, data handling, and how QC activities are employed and properly documented.

The information presented herein applies directly to the selection of sampling locations and field sampling methodology. The sample nomenclature, the number of samples to be collected, and the rationale for sampling and choosing the appropriate sample locations are presented in this section of the QAPP. Sampling methods including field documentation, sampling and decontamination procedures, are also discussed below.

3.1. Sample Process Design

Specific details of the sampling activities (i.e., sample locations, frequency, field and laboratory analysis, and rational) that will be conducted during the removal action are presented in the SSSP (Appendix B of the Work Plan).

3.1.1. Soil Excavation

Soil excavation activities will be performed to remove petroleum contaminated soil from the Site. During excavation, visual observation and field screening (discussed in Section 3.2.4) will be used to determine the final excavation extent and for segregating overburden soil from the underlying petroleum contaminated soil.

At the final limits of excavation, sidewall and base soil samples will be obtained and submitted for chemical analysis at a contract laboratory to identify the baseline concentrations for natural attenuation monitoring. Sidewall samples will be obtained at a frequency of one per 300 linear feet of excavation sidewall. Base samples will be obtained on a grid pattern with grid cells measuring approximately 150 feet (along the plume length) by approximately 100 feet (along the plume width).

The approximate locations of base and sidewall samples based on the maximum expected limits of excavation are shown on Figure B-2 of the SSSP (Appendix B of the Work Plan). The actual soil sample locations will be determined based on the final excavation limit.

3.1.2. Excavated Soil

During excavation, visual observation and field screening (discussed in Section 3.2.4) will be used to determine the contact between the petroleum contaminated soil and overlying overburden. Soil in which visual and field screening evidence of petroleum contamination is observed will be exported from the site and transferred to a permitted landfill. Overburden soil which does not exhibit visual and/or field screening evidence of contamination will be stockpiled on Site pending reuse as backfill.

Petroleum contaminated soil generated from the saturated zone will be allowed to drain until a representative sample from the stockpile passes the Paint Filter Liquids Test (PFLT; EPA Method 9095). If requested by the receiving landfill, representative soil samples will be obtained at the frequency determined by the receiving landfill, and submitted to a fixed laboratory for chemical analysis.

3.1.3. Import Fill Material

Representative samples of the source material for imported fill soil will be submitted to a contract laboratory for chemical analysis of SVOCs, VOCs, PCBs, and RCRA metals. Additionally, representative samples of the source material will be obtained tested to determine maximum dry density using a modified proctor by ASTM D1557.

3.1.4. Surface Water

Surface water monitoring activities will be conducted at locations upstream and downstream of the removal action area using field instrumentation to determine if Site activities are affecting surface water quality in the river.

3.1.5. Air

Air monitoring for particulate matter will be conducted at locations upwind and downwind using field instrumentation to determine if Site activities are generating particulate concentrations that exceed action levels (presented in Table B-1 of the SSSP) at the project boundary.

3.1.6. Treated Water

Water samples will be obtained from the water treatment system during operation to ensure that water being discharged to the St. Joe River meet the surface water quality criteria for the project (water quality discharge criteria are presented in Table B-2 of the SSSP). Water samples will be analyzed for petroleum hydrocarbons, SVOCs, PCBs and metals.

3.1.7. Groundwater

Following completion of the removal action, monitoring wells will be installed and sampled for petroleum hydrocarbons, SVOCs, PCBs and VOCs to monitor groundwater conditions and natural attenuation of Site contaminants. A post-construction monitoring plan will be prepared for approval by EPA following completion of the removal action construction.

3.2. Sampling Methods

This section discusses the methodologies that will be used, and the Standard Operating Procedures that will be followed for sample collection, sample nomenclature, sample handling, COC preparation and decontamination.

3.2.1. Soil Sampling Equipment

Excavation limit soil samples will be collected directly from the excavation sidewalls/base using hand tools (i.e., stainless steel spoon) or by use of the excavation equipment (i.e., backhoe or excavator). Samples collected from the excavation equipment will be collected from the approximate middle of the excavator or backhoe bucket (i.e., material that has not come in contact with the bucket) using stainless steel spoons. Stockpile soil samples will be obtained directly from the stockpile using hand tools (i.e., stainless steel spoon). Excavation limit and stockpiles soil samples will be collected at a depth of approximately 2 to 6 inches into the exposed surface and containerized as specified by the testing laboratory with the sample location, date, time and depth documented.

3.2.2. Water Sampling Equipment

Surface water quality samples will be collected directly from the St. Joe River using a container (i.e., glass jar) or container attached to a pole. Field instrumentation will be used to measure project specific water quality parameters (surface water quality parameters are presented in Table B-1 of the SSSP).

Water treatment system samples will be obtained directly from inline sampling ports or effluent water and containerized.

Groundwater samples obtained following completion of the removal action will be obtained using disposable Teflon bailers and/or using dedicated polyethylene tubing and peristaltic pump.

Treatment system and groundwater samples will be placed in laboratory specified container with the sample location, date, time and depth documented.

Prior to groundwater sample collection, groundwater levels will be measured in each monitoring well using an electric water level indicator (e-tape) to the nearest 0.01 foot relative to the surveyed casing rim elevations.

3.2.3. Decontamination Procedures

Care will be made to collect samples representative of Site conditions including avoidance of cross-contamination between sample locations during field activities. The following decontamination procedures will be implemented during field activities to avoid cross-contamination:

- Disposable sampling equipment will be used when possible to minimize decontamination requirements. Non-disposable sampling equipment (i.e. stainless steel spoons, bowls, and depth to water meter) will be decontaminated prior to and after use. Decontamination procedures for this equipment will consist of the following:
    1. Washing with a brush and non-phosphate detergent solution (e.g., distilled water and Alconox or Liqui-Nox);
    2. Rinsing in a container of distilled water;
    3. A final rinse by pouring distilled water over the equipment; and
    4. Wrapping the decontaminated equipment in aluminum foil and placing the equipment in a disposable plastic bag for storage.
- Field sampling staff will use nitrile gloves and change them between each sample interval and sample location to prevent cross-contamination.
- Pre-cleaned, QA-tested, and previously unused sample jars provided by the Laboratory will be used to contain samples.
- Sample containers will be labeled immediately before they are used to contain a sample. Samples will be assembled and documented according to appropriate chain of custody (COC) procedures prior to delivering to the Laboratory including custody seals on each cooler in the event that the Field Staff who collected the sample is not the person delivering the containers.

3.2.4. Field Screening

Soil generated by the removal action will be screened in the field for the presence of petroleum hydrocarbons to determine whether soil is acceptable for reuse on Site and to determine the lateral and vertical extent of the removal excavation.

The extent of excavation will be based on field screening methods (i.e., presence of free-phase petroleum hydrocarbons, oil-staining, sheen exceeding field screening criteria, or elevated field measured organic vapor). The procedure for conducting the petroleum sheen test will consist of collecting a representative soil sample and applying water until the soil is saturated and water collects around it.

3.2.4.1. VISUAL SCREENING

The soil will be observed for unusual color and/or staining indicative of possible contamination.

3.2.4.2. WATER SHEEN SCREENING

Visual classification of the petroleum-related sheen from representative soil samples will be evaluated relative to the following field screening criteria:

- None (no sheen visually detected);
- Sheen (oil film present, but does not display rainbow); and
- Rainbow (definite oil sheen, film, or product that displays rainbow).

A passing test will be defined as soil that does not exhibit rainbow sheen. If rainbow sheen is observed in a sample or any of the other field screening methods indicate the presence of petroleum, additional excavation will be performed as necessary to remove the suspect soil and field screening will be completed to confirm the completeness of the excavated area.

3.2.4.3. HEADSPACE VAPOR SCREENING

This is a semi-quantitative field screening method that can help identify the presence or absence of VOCs in soil samples. A portion of the soil sample will be placed in a resealable plastic bag. The bag will then be sealed to the extent practicable, capturing air in the bag. The bag is then shaken gently to expose the soil to the air trapped in the bag. The probe of a photoionization detector (PID) will then be inserted through a small opening in the bag, taking care not to clog the probe with soil. The maximum PID reading (in parts per million [ppm]) will be recorded on the field log for each sample. The PID will be calibrated to 100 ppm isobutylene in accordance with the manufacturer's recommendations. No soil samples used for headspace screening will be submitted to the laboratory for chemical analysis.

3.3. Analyte-Specific Considerations

For sample containers which may have preservative (e.g. VOCs), caution will be exercised to avoid spilling the preservative.

Staff will be trained in the correct procedures for collecting soil samples for VOC analysis in accordance with EPA Method 5035 requirements. As described in Section 3.2.1, approximately 2 to 6 inches of soil will be removed before collecting a sample to avoid VOC loss. A disposable soil plunger will be used to collect the required amount of soil. Soil will be placed into a pre-weighed container and sealed tightly to avoid VOC loss.

3.4. Field Documentation

The field staff will be responsible for documenting field sampling activities in an all-weather (e.g. "Rite-in-the-Rain") field notebook and on field logs, and by producing a draft technical field report at the end of each day of sampling. The field staff will also be responsible for implementing field QA/QC procedures in accordance with the methods outlined in this QAPP and general good practice sampling protocols. These procedures include recording and documenting relevant and appropriate information regarding project activities, sampling methods and data collected during performance of field activities at each sample location.

The following general guidelines should be followed in documenting fieldwork:

- Documentation will be maintained in a dedicated field notebook and on field forms.
- Notebook documentation will be completed in pencil and written errors will be crossed out with a single line.

Field notebooks will include records of pertinent activities related to specific sampling tasks. They will be bound books with sequentially numbered pages. The books will remain in the custody of the Field Coordinator until project completion, after which, the books will be kept in the project files.

The field notebook and forms will be maintained on a real-time basis and will include, where applicable and appropriate, the following information:

- Date, time of specific activities and weather conditions.
- Names of all personnel on the site, including visitors.
- Specific details regarding sampling activities, including sampling locations, type of sampling, depth, and sample numbers.
- Specific problems and resolutions.
- Identification numbers of monitoring instruments used that day.
- Chain-of-custody details, including sample identification numbers.

A draft field report will be prepared upon completion of field sampling activities each day. Field data that was recorded in the notebooks and field forms will be used to complete the field report.

3.5. Sample Nomenclature

Samples collected by GeoEngineers will be identified according to station and sampling sequence. Sample designations will be such that they can be entered into the GeoEngineers environmental data management system in order to facilitate management, recovery, and reporting of data.

- Excavation soil sample nomenclature will follow this convention: Station designation –Sample number – Depth interval
    - Station designation is “EX”.
    - Sample number is sequential in order of collection (i.e., 1 through n).
    - Depth interval is feet below ground surface (bgs).
    - For example, the third excavation limit sample collected at a depth of 11 feet below ground surface (bgs) would be labeled EX-3-11.
- Stockpile sample nomenclature will follow this convention: Station designation – Sample number
    - Overburden stockpile station designation is “SPO”.
    - Contaminated stockpile station designation is “SPC”.
    - Dangerous waste stockpile station designation is “SPD”.

- Sample number is sequential in order of collection (i.e., 1 through n).
- For example, the second overburden stockpile sample collected would be labeled SPO-2.

- Import material sample nomenclature will follow this convention: Source Location – Date
  - For example, proposed import material sampled from "XYZ" quarry on January 5, 2013 would be labeled XYZ-01052013.
- Surface water sample nomenclature will follow this convention: Station Designation – Date
  - The upstream sample station designation is "SWQU".
  - The downstream sample station designation is "SWQD".
  - For example, a water sample obtained at the downstream station on August 1, 2013 would be labeled SWQD-08012013.
- Air monitoring sample nomenclature will follow this convention: Station Designation – Date
  - The upwind sample station designation is "AIR-U".
  - The downwind sample station designation is "AIR-D".
  - For example, an air quality measurement collected at the downwind station on August 4, 2013 would be labeled AIR-D-08042013.
- Treated water sample nomenclature will follow this convention: Station Designation – Date
  - The influent (pre-treatment) sample station designation is "TS-IN".
  - The primary granular activated carbon (GAC) effluent sample station designation is "TS-MID".
  - The effluent (post-treatment) sample station designation is "TS-EF".
  - The product sample station designation is "Product"
  - For example, a pre-treatment water sample collected from the treatment system on July 5, 2013 would be labeled TS-IN-07052013.

3.6. Sample Preservation, Container and Hold Times

Samples for fixed laboratory analysis will be prepared, containerized, and preserved in the field in accordance with the guidelines described in Table C-4.

Samples will be kept on ice in coolers from the time of collection until delivery to the Laboratory. The samples will be preserved and hand delivered by the Field Staff, Field Coordinator, Technical Project Manager or courier to the laboratory. Alternatively, samples may be packaged and shipped to the laboratory. Samples will be kept at 0°to 6°C during delivery to the Laboratory and in refrigerated coolers while at the Laboratory until analyzed.

Holding times are defined as the time between sample collection and extraction, sample collection and analysis, or sample extraction and analysis. Some analytical methods specify a holding time for analysis only. For many methods, holding times may be extended by sample preservation techniques in the field. If a sample exceeds a holding time, then the results may be biased low. For example, if the extraction holding time for volatile analysis of soil sample is exceeded, then the possibility exists that some of the organic constituents may have volatilized from the sample or

degraded. Results for that analysis would be qualified as estimated to indicate that the reported results may be lower than actual Site conditions. Holding times are presented in Table C-4.

3.7. Discrepancies

In the event that changes become necessary to the fieldwork planned in the SSSP/QAPP, the Field Staff will discuss changes with the Field Coordinator and Technical Project Manager. Changes that may significantly change the experimental design will not be implemented until they are discussed between the Technical Project Manager and the Regulatory Project Manager.

3.8. Sample Handling and Custody

The Field Staff will be responsible for the care and custody of the samples until they are delivered or shipped to the Laboratory. Sample labels will be placed on all sample containers and will include the following information:

- Project Name or Number
- Sample identification number (nomenclature)
- Date and time

In addition to the above, COC records will be prepared and included in each cooler of samples delivered or shipped to the Laboratory. The COC procedures will be implemented in such a way as to document sample possession from the time of sample collection until sample disposal by the Laboratory.

A sample will be considered in custody if it is:

- In the physical possession or view of the GeoEngineers staff or
- Sealed and placed in a secure location after having been in physical possession.

The COC record will contain the same information as is contained on the sample labels and serve as documentation of sample handling during delivery or shipment. One copy of this custody record will remain with the shipped samples, and one copy will be retained by the Field Staff who originally sampled and relinquished the samples. The sampler's copy will be maintained in the project file.

The samples relinquished to the Laboratory will be subject to transfer-of-custody and shipment procedures, as follows:

- The samples shipped to the Laboratory will be accompanied by a COC record documenting which samples are present in the cooler. When transferring possession of samples, the individuals relinquishing and receiving the samples will sign, date, and note the times of the sample transfer on the record. This custody record will document transfer of sample custody from the sampler to other persons, including the Laboratory.
- The samples will be properly packed for shipment and dispatched to the Laboratory for analysis, with a separate, signed COC enclosed in each sample cooler. If a GeoEngineers representative is not the person delivering the sample coolers to the Laboratory, sample shipping containers will be custody-sealed before being delivered to the Laboratory. The

preferred procedure for custody sealing includes use of a custody signed seal placed across filament tape that is wrapped around the cooler at least twice. The custody seal should then be folded over and attached to itself in such a way as the package can only be accessed by cutting the filament tape or breaking the seal.

- Samples will be shipped and analyzed within the established hold times that are listed in Table C-4.

The Laboratory will utilize an established system for sample check-in, sample tracking, laboratory analyses assignment and performance, and sample check-out. The system will allow management review of the laboratory data before the issuance of laboratory reports. The management review will be accomplished on two levels: review of raw data for each analysis, and review of the final results to check for consistency or agreement of the results between parameters. Computers are routinely used for this purpose to take advantage of fast retrieval of information.

Upon receipt of samples accompanied by a COC form identifying the analytical parameters to be performed, the Laboratory Coordinator or a delegate will conduct the following:

- Log in the samples and assign Laboratory identification numbers. For each sample, a record will be generated containing the sample station number, sample description, analytical requirements, pricing information, and report format description.
- Enter these data into the Laboratory computer system.
- Prepare an analysis assignment sheet, noting the analytical parameters to be run and providing spaces for resulting analytical data.
- Assign the samples a position in the Laboratory workload backlog.
- Retain the COC form upon completion of data generation.

3.9. Analytical Methods

Laboratory analytical methods for the chemical analysis of soil and water samples collected during this investigation will include petroleum hydrocarbons, VOCs, SVOCs, PCBs as Aroclors, and metals. Samples and QC samples shall be analyzed following the analytical methods listed in Tables C-2 and C-3, using laboratory instruments prescribed in the methods. The analytical methods must meet the technical acceptance criteria specified by the method prior to the analysis of environmental samples. Samples that are not analyzed initially (i.e., placed on "hold") will be stored at the laboratory for up to 6 months, and will be disposed of by the laboratory following this period. Samples to be analyzed initially will be analyzed within proper holding times, which are listed in Table C-4.

The laboratory is required to comply with their current written standard operating procedures. Individuals responsible for corrective actions are listed in Section 2.1. All laboratory personnel will be responsible for reporting problems that may compromise the quality of the data to the laboratory project manager. A narrative describing the anomaly, the steps taken to identify and correct it, and the treatment of the relevant sample batch (i.e., recalculation, reanalysis, re-extraction) will be submitted with the data package.

EPA Method 5035 will be used for collection of soil samples to be analyzed for VOCs in the field. Disposable plungers will be used to collect the correct amount of soil for each sample.

3.10. Quality control

Quality control activities that will be implemented for each sampling, analysis or measurement technique are summarized in Table C-5. Formulas for calculating QC statistics are provided in Section 2.4.2.

The Laboratory will maintain and implement documented QA/QC procedures. The laboratory QA/QC program will provide the following:

- Procedures that must be followed for certifying the precision and accuracy of the analytical data generated by the Laboratory.
- Documentation of each phase of sample handling, data acquisition, data transfer, report preparation, and report review.
- Accurate and secure storage and retrieval of samples and data.
- Detailed instructions for performing analyses and other activities affecting the quality of analytical data generated by the Laboratory.
- Appropriate management-level review and approval of procedures, revisions to procedures, and control of procedures in such a way so that laboratory personnel that require specific procedures have access to them.

A summary of MRLs and MDLs for the Target Analytes are listed in Tables C-2 and C-3.

3.11. Instrument/Equipment Testing, Inspection, and Maintenance

3.11.1. Field Instrumentation

Field instrumentation used during this project includes a water quality meter, air particulate meter and PID. The field equipment is maintained as needed by an outside servicer qualified to maintain such devices consistent with manufacturer's specifications.

Field instrument calibration and calibration checks facilitate accurate and reliable field measurements. The calibration of the field equipment used on the project will be checked and adjusted as necessary in general accordance with the manufacturer's recommendations. Methods and intervals of calibration checks and instrument maintenance will be based on stability characteristics, required accuracy, intended use, and environmental conditions. The basic calibration check frequencies are described below.

The particulate meter used for air monitoring will be calibrated by a qualified serviceman on an annual basis. In the event the meter may not be working correctly, a separate meter will be shipped to the field team and the non-working meter will not be used.

The water quality meter used for surface water monitoring (i.e., pH, electric conductivity, and turbidity) will be calibrated on a weekly basis in accordance with the manufactures recommendations. Calibration check and calibration results will be recorded in the field notebook.

In the event that the instrument does not calibrate properly, spare parts will be available for minor field maintenance. If the instrument cannot be made to work based on available equipment, a separate instrument will be shipped to the field team and the non-calibrating instrument will not be used.

The PID used for headspace vapor screening will be calibrated to 100 ppm isobutylene in general accordance with the manufacturer's recommendations. Calibration check and calibration results will be recorded in the field notebook. In the event that the instrument does not calibrate properly, spare parts will be available with the PID for minor field maintenance. If the instrument cannot be made to work based on available equipment, a separate instrument will be shipped to the field team and the non-calibrating instrument will not be used.

All equipment is visually inspected before use by the Field Staff to ensure it is clean and in good working condition. Inspection includes visual inspection of the outside of the equipment, and battery checks.

3.11.2. Laboratory Instrumentation

For chemical analytical testing, calibration procedures will be performed in general accordance with the analytical methods used and the laboratory's standard operating procedures (SOPs). Calibration documentation will be retained at the laboratory.

Instruments and equipment used during laboratory sample analysis will be operated, calibrated and maintained according to the manufacturer's guidelines and recommendations as well as criteria set forth in the applicable analytical methodology and/or in accordance with the laboratory's QA manual and SOPs.

3.12. Instrument/Equipment Calibration and Frequency

All laboratory instrument calibrations and their appropriate chemical standards are to comply with the specific methods within EPA SW-846, Test Methods for Evaluating Solid Waste, Physical and Chemical Methods, 3rd Edition, December 1996 and the Laboratory SOPs. Calibration documentation, initial (ICALs) and continuing (CCALs), will be retained at the Laboratory. Deficiencies to be resolved are the responsibility of the Laboratory Project Manager.

3.13. Inspection/Acceptance of Supplies and Consumables

The Field Coordinator is responsible for ensuring that field supplies and consumables are available on Site. Field equipment and consumables generally originate from the supply room, which is re-stocked by suppliers as necessary. Laboratory containers are supplied by the laboratory. The Field Coordinator will track, retrieve and inspect these materials.

Laboratory reagents will be of sufficient quality to minimize or eliminate laboratory blank background concentrations of the specific analytes to be measured. Reagents must also not contain other contaminants that may interfere with the analysis for the analytes of interest. All sample containers will be provided by the laboratory. All containers will be certified clean, verified with laboratory analysis. The Laboratory Project Manager is responsible for maintaining laboratory supplies.

3.14. Non-Direct Measurements

A substantial quantity of data has previously been collected at the Site. The previously collected data will be used in conjunction with the data collected during this removal action to delineate the nature and extent of contamination on the western portion of the Site. The previously collected data that will be used include observations present on investigation logs as well as chemical analytical data that have previously been reported in the draft and draft final EE/CA prepared for the Site (E&E, 2010). As the data has previously been utilized for Site characterization as presented in the EE/CA, it is considered of adequate quality for the purposes of this removal action.

3.15. Data Management

The data generated by the Laboratory will be managed in accordance with the procedures outlined in this QAPP and applicable Laboratory operating procedures. The Laboratory Project Manager is responsible for laboratory record-keeping, document control, and delivery of reliable and accurate data. Data management procedures are described below.

3.15.1. Data Collection

In addition to the sampling data recorded on the chain-of-custody forms, data describing the processing of samples will be accumulated in the Laboratory and recorded in Laboratory notebooks. Laboratory notebooks will contain the following information:

- Date of sample processing.
- Laboratory sample numbers.
- Analyses or operations performed for the samples.
- Calibration data applicable to the sample analysis.
- Quality control samples applicable to the sample analysis.
- Concentrations and required dilutions for the analysis.
- Instrument readings.
- Any special observations.
- The analyst's signature.

3.15.2. Data Reduction

Data reduction consists of calculating concentrations in samples from the raw data produced by the measuring instruments, and it will be performed by individual analysts assigned to the project. The complexity of the data reduction is dependent on specific analytical methods and the number of discrete operations (extractions, dilutions, and concentrations) involved in obtaining a sample concentration that can be measured.

For methods relying on a calibration curve, sample responses will be applied to the linear regression line to obtain an initial raw result that will be factored into method-specific equations to obtain an estimate of analyte concentrations in the original sample. Rounding will not be

performed until after the final result is obtained to minimize rounding errors, and results will not normally be expressed in more than two (2) significant figures.

Upon completion of a set of analyses, calculations will be completed and checked by the analyst. The associated QC data derived from the analysis of method blanks, blank spikes, and duplicates will be entered onto QC charts and verified to be within control limits. If they are acceptable, the data will be entered into the laboratory computer system and data summaries (notebook pages, final concentrations) will be submitted to the Laboratory Project Manager for review. After approval, data are manually entered into a computer, using a Microsoft Excel® or equivalent format. If QC samples do not meet acceptance criteria, the Laboratory Project Manager will be notified and corrective actions will be taken, as appropriate. Acceptable data will be submitted to the Laboratory Project Manager for review. After the Laboratory Project Manager approval, the Data Management Coordinator will be notified that the data are ready to be reported, and the completed analyses can be removed from the laboratory backlog.

The Laboratory Project Manager will generate a hard copy data summary that will be reviewed and signed by the Laboratory Project Manager and the Laboratory Coordinator.

Copies of the raw data and the calculations used to generate the final results will be retained on file to allow reconstruction of the data reduction process at a later date, if necessary.

3.15.3. Data Review

System reviews will be performed at all levels. The individual analysts will review the quality of data through calibration checks, quality control sample results, and performance evaluation samples.

The final routine review is performed by the Laboratory Project Manager prior to reporting the results to the client. Non-routine audits are performed by regulatory agencies and client representatives. The level of detail and the areas of concern during these reviews will be dependent on the specific program requirements.

3.15.4. Data Reporting

Laboratory reports will contain final analytical results (uncorrected for blank contamination and out-of-control recoveries), identification of the analytical methods used, levels of detection, surrogate and matrix spike recovery data, and method blank data. In addition, special analytical problems and/or any modifications of the referenced methods will be noted. The number of significant figures reported will be consistent with the limits of uncertainty inherent in the analytical method.

Data are normally reported in units commonly used for the analyses performed. Concentrations in solids are expressed in terms of weight per unit weight, milligrams per kilogram or liter (ppm for inorganics) or micrograms per kilogram or liter (ppb for organics).

- mg/kg = ppm
- mg/L = ppm

- µg/kg = ppb
- µg/L = ppb

Illustrated unit conversions are as follows:

- 1 mg/kg = 1000 µg/kg
- 1 mg/L = 1000 µg/L
- 1 µg/kg = 0.001 mg/kg
- 1 µg/L = 0.001 mg/L

3.15.5. Electronic Deliverables

Upon completion of analyses, the Laboratory shall prepare electronic deliverables for all packages in accordance with the specifications in this QAPP. The Laboratory shall provide electronic deliverables no later than five business days after receipt of final analytical results. Final analytical results will be provided by the Laboratory within 10 days of the sample analysis.

The Electronic Data Deliverable (EDD) should follow the EQuIS Chemistry 4-file format. Specific details regarding data types, valid values, and field definitions are referenced in the Lab Specification. A template of the EQuIS 4-file format (provided upon request) includes a list of valid values and must be obtained in order to ensure the correct use of codes. The template spreadsheet contains four tabs, each with a format for importing various data into different parts of the EQuIS Chemistry data structure and four tabs containing valid values. Ultimately, the EDDs provided by the Laboratory must be delivered as text (.txt), comma-delimited (.csv), or Excel files.

Electronic files will be delivered via e-mail with a supporting hard copy to GeoEngineers. Electronic files will be reviewed by GeoEngineers to determine if the specifications in this section have been followed. If a file format or structure does not meet specifications, GeoEngineers may request a complete re-submittal. Upon reviewing the electronic file, GeoEngineers may also require a re-submittal based on inconsistencies (hereafter referred to as an "error") in code, spelling or missing information.

Each EDD package (a package being a sample delivery group [SDG]) may be delivered as separate files or as a single Excel workbook. Both methods require four file types: one type for samples, one for tests, one for results, and one for batches. If the separate file method is used, the following nomenclature must be followed in the file name - [SDG]_EFW2Lab[type].[extension] where:

- SDG = sample delivery group (i.e. lab package ID)
- Type = one of the following: SMP for sample data, TST for test data, RES for result data, BCH for batch data
- Extension = the file extension (e.g. .xls, .csv, .txt)

For example, for sample delivery group K1234 the files would be: K1234_EFW2LabSMP.xls, K1234_EFW2LabTST.xls, K1234_EFW2LabRES.xls, and K1234_EFW2LabBCH.xls.

The Laboratory will maintain on file all of the raw data, laboratory notebooks, and other documentation pertinent to the work on the project. This file will be maintained for a period of five years from the date of the project, unless a written request is received for an extended retention time.

3.15.6. Data Archival and Retrieval

The Laboratory will utilize an established system for data archival and retrieval. Computers are routinely used for this purpose to take advantage of fast retrieval of information. Data will be stored in-office and off site in a backup location. Hardware and software will be suitable to the secure archival and retrieval of information.

4.0 ASSESSMENT AND OVERSIGHT

4.1. Assessments and Response Actions

4.1.1. Review of Field Documentation and Laboratory Receipt Information

Documentation of field sampling data will be reviewed daily or within five days by the Technical Project Manager for conformance with project QC requirements described in this QAPP. Minor corrective actions will be addressed by the Technical Project Manager. Major discrepancies will be reported to the Regulatory Project Manager, who has the authority to issue stop work orders. Major discrepancies will be documented in the final report, along with the reason for the discrepancies and any corrective actions. At a minimum, the Technical Project Manager will check field documentation for the following:

- Sample collection information (date, time, location, matrices, etc.);
- Field instruments used and calibration data;
- Sample collection protocol;
- Sample containers, preservation, and volume;
- Field QC samples collected at the frequency specified;
- COC protocols; and
- Sample shipment information.

Sample receipt forms provided by the laboratory will be reviewed by the Technical Project Manager or Quality Assurance Leader for QC exceptions. The final laboratory data package will describe (in the case narrative) the effects that any identified QC exceptions have on data quality. The laboratory will review transcribed sample collection and receipt information for correctness prior to delivering the final data package.

4.1.2. Response Actions for Field Sampling

The Field Staff, or a designee, will be responsible for correcting equipment malfunctions or requesting new equipment throughout the field sampling effort and resolving situations in the field that may result in nonconformance or noncompliance with the QAPP. Corrective measures will be documented in the field notebook.

4.1.3. Corrective Action for Laboratory Analyses

The Laboratory is required to comply with their current written standard operating procedures. The Laboratory Project Manager will be responsible for ensuring that appropriate corrective actions are initiated as required for conformance with this QAPP. All laboratory personnel will be responsible for reporting problems that may compromise the quality of the data to the Laboratory Project Manager. A narrative describing the anomaly, the steps taken to identify and correct it, and the treatment of the relevant sample batch (i.e., recalculation, reanalysis, re-extraction) will be submitted with the data package.

4.2. Reports to Management

The field work including construction monitoring, soil, water and air sampling for the removal action is expected to be performed over an estimated 16 week period. The Technical Project Manager will provide status reports to the Regulatory Project Manager on a weekly basis (i.e., progress reporting). Additionally, analytical data will be transmitted to the Regulatory Project Manager within seven days following validation or as otherwise agreed with EPA. Status reports will include a brief discussion of activities performed to date, major findings and anticipated future tasks.

5.0 DATA VALIDATION AND USABILITY

5.1. Data Review, Verification and Validation

The data validation and usability elements of the QAPP as detailed below address the QA/QC activities that occur after data collection and/or data generation is complete. Implementation of these elements ensures that the data conform to the specified criteria and will achieve the project objectives. Data validation will be performed in general accordance with the two EPA documents, USEPA Contract Laboratory Program National Functional Guidelines for *Organic* and *Inorganic* Data Review (EPA, 1999 and 2004).

The data are not considered final until validated. All data, including laboratory and field QC sample results, will be summarized in a data validation report. Specific acceptance criteria are discussed in Section 2.4.2. The data validation report will focus on data that did not meet the MQOs specified in Table C-1. The data validation report will also describe any deviations from this QAPP and actions taken to address those deviations.

Full laboratory data packages will be obtained for all soil samples analyzed. These data packages will include all formal Contract Laboratory Program (CLP) summary forms, and they will also include all instrument raw data from the chemical analyses. GeoEngineers will conduct an EPA Stage "2B" level validation on all data packages. In addition, GeoEngineers will conduct EPA Stage "4" level validation on ten percent (10%) of the data packages. These data will be reviewed for the following QC parameters:

- Holding times and sample preservation
- Method blanks
- MS/MSD analyses

- LCS/LCSD analyses
- Surrogate spikes
- Duplicates/replicates
- Field/Lab duplicates
- Calibrations (Initial and Continuing)
- Internal Standards
- Instrument Tunes

In addition to these QC parameters, other documentation such as sample receipt forms and case narratives will be reviewed to evaluate laboratory QA/QC.

5.2. Verification and Validation Methods

The Quality Assurance Leader will verify and validate data received from the laboratory. Any issues will be discussed with the Laboratory Project Manager and/or the Technical Project Manager, if needed. Issues will be resolved by these individuals. The final data validation report will document the results of any issue resolution process.

Hard-copy laboratory reports will provide the analysis-specific information including final sample analytical results, reportable field and laboratory QA/QC analytical results, MDLs and MRLs. The laboratory data will also be reported via electronic media using the tabular outputting capabilities of standard software formats.

The term "reporting limit" will be used interchangeably with "quantitation limit" to mean the lowest concentration at which an analyte can be quantified subject to the quality control criteria of the analytical method. These terms are different from "MDL," which refers to the lowest concentration that the analytical method can ideally detect.

The Quality Assurance Leader will be responsible for overseeing data validation qualifiers including but not limited to "U," "J,", and "R" to explain final data quality issues that are affecting the laboratory data for the data user. The validation process will take any specific laboratory qualifiers, and any other laboratory quality control issues into consideration when applying and creating this final set of usable qualifiers, as described in the EPA document "Guidance for Labeling Externally Validated Laboratory Analytical Data for Superfund Use" (EPA, 2009). The qualifiers U, J and R are explained as follows:

- "U" indicates that a compound was analyzed for but not detected. The associated numerical value is the estimated sample quantitation limit, which is corrected for dilution and percent moisture.
- "J" indicates that a compound was detected below the reporting limit and the value is estimated or the value was estimated by the validator because of instrument bias reasons.
- If any target analytes are found in a laboratory method blank, it will be regarded as blank contamination. In these cases, the result of a given analyte in the method blank will be compared to any positive result of the same analyte in the associated field samples. If a field

sample result is less than five times (ten times for common laboratory contaminants like acetone, phthalates, etc.) the result that is reported in the method blank, the result will be considered blank contamination. Accordingly, the result will be qualified as not-detected "U" at the elevated reporting limit.

- If there are two analyses reported by the laboratory for one sample (as in the case of dilutions), the validator will make a decision as to which analysis to use in the final assessment. As there should be only one reported result per analyte for a given sample, any extraneous results will be qualified as not-reportable "R" and will not be used.

5.3. Reconciliation With User Requirements

A data validation report will be produced by the project Quality Assurance Leader to identify cases where the projects MQOs were not met. The data validation report will include a discussion of the uncertainty and limitations of the data.

6.0 REFERENCES

Ecology and Environment (E&E). "Draft Final Engineering Evaluation/Cost Analysis, Avery Landing Site, Avery Idaho." Prepared for EPA by E&E, dated December 2010.

GeoEngineers, Inc., "Supplemental Site Investigation Report, Avery Landing Site, Avery, Idaho." Prepared for Potlatch Forest Holdings, Inc., GEI File No. 2315-016-01, dated November 9, 2011.

Golder Associates. "Draft Engineering Evaluation/Cost Analysis Work Plan, Avery Landing Site, Avery Idaho." Prepared for Potlatch Land and Lumber, LLC by Golder Associates, dated January 23, 2009.

U.S. Environmental Protection Agency (USEPA). "USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review," EPA-540/R-99/008, Office of Emergency and Remedial Response. US Environmental Protection Agency, Washington, DC, dated October 1999.

U.S. Environmental Protection Agency (USEPA). "EPA Requirements for Quality Assurance Project Plans, EPA QA/R-5," EPA-240/B-01/003, Office of Emergency and Remedial Response. US Environmental Protection Agency, Washington, DC, dated March 2001.

U.S. Environmental Protection Agency (USEPA). "EPA Guidance for Quality Assurance Project Plans, EPA QA/G-5", EPA-240/R-02/009, Office of Emergency and Remedial Response. US Environmental Protection Agency, Washington, DC, dated December 2002.

U.S. Environmental Protection Agency (USEPA). "USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review," EPA 540-R-04-004, Office of Emergency and Remedial Response. US Environmental Protection Agency, Washington, DC, dated October 2004.

U.S. Environmental Protection Agency (USEPA). "Guidance for Labeling Externally Validated Laboratory Analytical Data for Superfund Use," EPA 540-R-08-005, Office of Solid Waste and Emergency Response. US Environmental Protection Agency, Washington, DC, dated January 2009.

Table C-1

Measurement Quality Objective

Avery Landing Site

Avery, Idaho

Laboratory Analysis	Reference Method[1]	Check Standard (LCS) %R Limits[2,3]		Matrix Spike (MS) %R Limits[3]		Surrogate Standards (SS) %R Limits [2,3,4]	MS Duplicate Samples or Lab Duplicate RPD Limits[5]		Field Duplicate Samples RPD Limits[5]	
		Soil	Water	Soil	Water	Soil/Water	Soil	Water	Soil	Water
Metals	EPA 6010/7060/7470/7471 /7421/200.7/200.8	80%-120%	80%-120%	75%-125%	75%-125%	NA	≤20%	≤20%	≤35%	≤20%
Diesel- and Heavy oil-range Hydrocarbons	Ecology NWTPH-Dx with silica gel/acid wash cleanup	50%-150%	50%-150%	NA	NA	50%-150%	≤40%	≤40%	≤35%	≤20%
VOCs	EPA 8260	70%-130%	70%-130%	70%-130%	70%-130%	70%-130%	≤30%	≤30%	≤35%	≤20%
SVOCs	EPA 8270/SIM	70%-130%	70%-130%	70%-130%	70%-130%	70%-130%	≤30%	≤30%	≤35%	≤20%
PCBs	EPA 8082 Modified	70%-130%	70%-130%	70%-130%	70%-130%	70%-130%	≤40%	≤40%	≤35%	≤20%

Notes:

[1] Method numbers refer to EPA SW-846 Analytical Methods or Washington State Department of Ecology (Ecology) recommended analytical methods.

[2] Recovery ranges are estimates.

[3] Percent Recovery Limits are expressed as ranges based on laboratory control limits. Limits will vary for individual analytes.

[4] Individual surrogate recoveries are compound specific.

[5] RPD control limits are only applicable if the concentrations are greater than 5 times the method reporting limit (MRL). For results less than 5 times the MRL, the difference between the sample and duplicate must be less than 2X the MRL for soils and 1X the MRL for waters.

VOCs = Volatile organic compounds

SVOCs = Semi-volatile organic compounds

PCBs = Polychlorinated biphenyls

LCS = Laboratory Control Sample

MS/MSD = Matrix Spike/Matrix Spike Duplicate

RPD = Relative Percent Difference

NA = Not Applicable

Table C-2

Reporting Limits and Screening Values for Soil Samples

Avery Landing Site
Avery, Idaho

Analyte	Method Detection Limit[1]	Method Reporting Limit[1]	Screening Value[2]
Metals (mg/kg)			
Arsenic	0.46	5	0.39
Barium	0.06	3	896
Cadmium	0.11	0.2	1.4
Chromium	0.27	5	2,135
Lead	0.13	2	50
Mercury	0.0013	0.025	0.0051
Selenium	0.65	5	2.0
Silver	0.03	0.3	0.19
Petroleum Hydrocarbons (mg/kg)			
Diesel-range petroleum hydrocarbons	1.31	10	NE
Heavy-oil range petroleum hydrocarbons	0.665	10	NE
Volatile Organic Compounds (VOCs; µg/kg)			
1,2-Dichlorobenzene	0.293	1	5,250
1,3,5-Trimethylbenzene	0.254	1	145
1,4-Dichlorobenzene	0.232	1	75.5
2-Butanone	0.513	5	11,800
2-Hexanone	0.439	5	NE
4-Isopropyl Toluene	0.236	1	NE
Acetone	0.482	5	17,400
Benzene	0.296	1	17.8
Carbon Disulfide	0.559	1	5,970
Chlorobenzene	0.219	1	618
cis-1,2-Dichloroethene	0.24	1	193
Ethyl Benzene	0.202	1	10,200
Isopropyl Benzene	0.233	1	3,460
m,p-Xylene	0.392	1	1,670
Methylene Chloride	0.635	2	16.9
n-Butylbenzene	0.262	1	1200
n-Propyl Benzene	0.272	1	NE
o-Xylene	0.224	1	1,670
s-Butylbenzene	0.24	1	1,170
Styrene	0.138	1	1,830
t-Butylbenzene	0.306	1	852
Toluene	0.151	1	4,890
Trichloroethene	0.212	1	2.88
Carcinogenic Polycyclic Aromatic Hydrocarbons (cPAHs; µg/kg)			
Benzo(a)anthracene	19.4	67	422
Benzo(a)pyrene	0.94	5	42.2
Benzo(b)fluoranthene			
Benzo(k)fluoranthene			
Chrysene	21	67	33,400
Dibenzo(a,h)anthracene	24.6	1.33	5
Indeno(1,2,3-cd)pyrene	27	67	422
Non-Carcinogenic Polycyclic Aromatic Hydrocarbons (PAHs; µg/kg)			
1-methylnaphthalene	28.8	67	22,000
2-Methylnaphthalene	24.4	67	3,310
Acenaphthene	16.4	67	52,300

Acenaphthylene	21.1	67	78,000
Anthracene	20.2	67	1,040,000
Benzo(g,h,i)perylene	25.9	67	1,180,000
Fluoranthene	41.6	67	364,000
Fluorene	15.6	67	54,800
Naphthalene	14.9	67	1,140
Phenanthrene	20	67	79,000
Pyrene	46.8	67	359,000
Semi-Volatile Organic Compounds (µg/kg)			
2-Chloronaphthalene	21.3	67	128,000
2-Methylphenol	23.3	67	1,800
4-Methylphenol	22.4	67	141
4-Nitroaniline	102	330	2.99
Bis(2-Chloroethoxy)methane	17.3	67	NE
bis(2-Ethylhexyl)phthalate	23.9	67	11,800
Butylbenzylphthalate	24.6	67	511,000
Carbazole	14.7	67	NE
Dibenzofuran	18.2	67	6,100
Diethylphthalate	20.9	67	27,500
Di-n-butylphthalate	33.1	67	31,000
Di-n-octylphthalate	19.1	67	183,000
Phenol	16.1	67	7,360
Polychlorinated Biphenyls (µg/kg)			
Aroclor 1016	9.33	33	See Total PCBs
Aroclor 1221	NA[3]	NA[3]	See Total PCBs
Aroclor 1242			See Total PCBs
Aroclor 1248			See Total PCBs
Aroclor 1254			See Total PCBs
Aroclor 1260	7.066	33	See Total PCBs
Total PCBs (sum of Aroclors)	NA	NA	150

Notes:

[1] Values from Analytical Resources (ARI), Inc. of Tukwila, Washington.

[2] Values referenced from December 2010 Draft Final Engineering Evaluation/Cost Estimate (E&E, 2010).

[3] A mixture of Aroclors 1016 and 1260 (1660) contains PCB congeners that cover the full chromatographic range of the Aroclors 1016, 1221, 1232, 1242, 1248, 1254 and 1260. EPA Method 8082A describes the use of 1660 to determine the linearity and sensitivity for the full range of Aroclors. When Aroclors other than 1016 or 1260 are identified they are quantified using a single point calibration based on the linearity and sensitivity determined using 1660. Following this reasoning, ARI normally performs limit of detection (LOD) studies only for Aroclors 1016 and 1260.

NE = Not established

NA = Not available

mg/kg = milligram per kilogram

µg/kg = microgram per kilogram

Shading indicates the method reporting limit is greater than the screening value

Table C-3

Reporting Limits and Screening Values for Water Samples

Avery Landing Site
Avery, Idaho

Analyte	Method Detection Limit[1]	Method Reporting Limit[1]	Screening Value[2]
Metals (µg/L)			
Arsenic	0.048	0.2	10
Cadmium	0.01	0.1	0.6
Copper	0.158	0.5	11
Lead	0.046	0.1	2.5
Mercury	0.0026	0.02	0.012
Thallium	0.004	0.2	0.24
Zinc	0.497	4	120
Petroleum Hydrocarbons (mg/L)			
Diesel-range petroleum hydrocarbons	0.016	0.1	5
Heavy-oil range petroleum hydrocarbons	0.019	0.25	5
Carcinogenic Polycyclic Aromatic Hydrocarbons (cPAHs; µg/L)			
Benzo(a)anthracene	0.0271	0.1	0.0038
Benzo(a)pyrene	0.0615	0.1	0.0038
Benzofluoranthenes (total)	0.0856	0.1	0.0038
Chrysene	0.0314	0.1	1.2
Semi-Volatile Organic Compounds (µg/L)			
bis(2-Ethylhexyl)phthalate	1.877	1	1.2
n-Nitrosodiphenylamine	0.46	1	3.3
Polychlorinated Biphenyls (µg/L)			
Aroclor 1016	0.00284	0.01	See Total PCBs
Aroclor 1221	NA[3]	NA[3]	See Total PCBs
Aroclor 1242			See Total PCBs
Aroclor 1248			See Total PCBs
Aroclor 1254			See Total PCBs
Aroclor 1260	0.00276	0.01	See Total PCBs
Total PCBs (sum of Aroclors)	NA	NA	0.000064

Notes:

[1] Values from Analytical Resources (ARI), Inc. of Tukwila, Washington.

[2] Idaho surface water quality criteria referenced from Idaho Administrative Code 58.01.02.

[3] A mixture of Aroclors 1016 and 1260 (1660) contains PCB congeners that cover the full chromatographic range of the Aroclors sensitivity for the full range of Aroclors. When Aroclors other than 1016 or 1260 are identified they are quantified using a single point calibration based on the linearity and sensitivity determined using 1660. Following this reasoning, ARI normally performs limit of detection (LOD) studies only for Aroclors 1016 and 1260.

NE = Not established

NA = Not available

mg/L = milligram per liter

µg/L = microgram per liter

Shading indicates the method reporting limit is greater than the screening value

Table C-4

Test Methods, Sample Containers, Preservation and Holding Time

Avery Landing Site

Avery, Idaho

Analysis	Method	Soil Sample				Water Sample			
		Minimum Sample Size	Sample Containers	Sample Preservation	Holding Times[1]	Minimum Sample Size	Sample Containers	Sample Preservation	Holding Times[1]
Metals[2]	EPA 6010/7060/7470/7471/7421/200.7/200.8	100 g	4 or 8 oz glass wide mouth with Teflon-lined lid	Cool 4°C	180 days/ 28 days for Mercury	500 mL	1 L poly bottle	HNO_3 - pH<2 (Dissolved metals preserved after filtration)	180 days (28 days for Mercury)
Diesel- and Oil-Range Hydrocarbons	Ecology NWTPH-Dx with acid/silica gel cleanup	100 g	8 or 16 oz amber glass wide-mouth with Teflon-lined lid	Cool 4°C	14 days to extraction/ analysis	1 L	1 liter amber glass with Teflon-lined lid	Cool 4°C, HCl to pH < 2	14 days to extraction 40 days from extraction to analysis
VOCs	EPA 8260	10 g	Three 40mL glass vial (VOA)	Cool 4°C	14 days to extraction/ analysis	40mL	Three 40mL glass vial (VOA)	Cool 4°C	14 days to extraction 40 days from extraction to analysis
SVOCs	EPA 8270/SIM	100 g	4 or 8 oz glass wide mouth with Teflon-lined lid	Cool 4°C	14 days to extraction, 40 days from extraction to analysis	1 L	1 liter amber glass with Teflon-lined lid	Cool 4°C	7 days to extraction 40 days from extraction to analysis
PCBs	EPA 8082 Low level	100 g	4 or 8 oz glass wide mouth with Teflon-lined lid	Cool 4°C	None	1 L	1 liter amber glass with Teflon-lined lid	Cool 4°C	None

Notes:

[1] Holding Times are based on elapsed time from date of collection.

VOCs = Volatile organic compounds

SVOCs = Semi-volatile organic compounds

PCBs = Polychlorinated biphenyls

oz = ounce

mL = milliliter

L = liter

g = gram

Table C-5

Quality Control Samples - Type and Frequency

Avery Landing Site

Avery, Idaho

Parameter	Field QC		Laboratory QC			
	Field Duplicates	Trip Blanks	Method Blanks	LCS	MS / MSD	Lab Duplicates
Diesel- and Oil-Range Hydrocarbons with silica gel/acid wash cleanup	1/20 soil/water samples	NA	1/batch	1/batch	NA	1/batch
VOCs	1/20 soil/water samples	1/cooler	1/batch	1/batch	1 set/batch	NA
SVOCs	1/20 soil/water samples	NA	1/batch	1/batch	1 set/batch	NA
PCBs	1/20 soil/water samples	NA	1/batch	1/batch	1 set/batch	NA
Metals	1/20 soil/water samples	NA	1/batch	1/batch	1 MS/batch	1/batch

Notes:

An analytical lot or batch is defined as a group of samples taken through a preparation procedure and sharing a method blank, LCS, and MS/ MSD (or MS and lab duplicate). No more than 20 field samples can be contained in one batch.

LCS = Laboratory control sample

MS = Matrix spike sample

MSD = Matrix spike duplicate sample

VOCs = Volatile organic compounds

SVOCs = Semi-volatile organic compounds

PCBs = polychlorinated biphenyls

APPENDIX D
Health and Safety Plan

Site Health and Safety Plan

Avery Landing Site
Avery, Idaho

for
U.S. Environmental Protection Agency on Behalf of Potlatch Land and Lumber

March 4, 2013

GeoEngineers

Plaza 600 Building
600 Stewart Street, Suite 1700
Seattle, WA 98101
206.728.2674

Site Health and Safety Plan

Avery Landing Site
Avery, Idaho

File No. 2315-016-02

March 4, 2013

Approvals:

Signature: _____ Date: _____

John M. Herzog, PhD, Principal, GeoEngineers

Signature: _____ Date: _____

Robert S. Trahan, Environmental Geologist, GeoEngineers

Signature: _____ Date: _____

Wayne Adams, Health & Safety Program Manager, GeoEngineers

RST:JMH:csv

GeoEngineers

Table of Contents

1.0 INTRODUCTION

This HASP is to be used in conjunction with the GeoEngineers Safety Program Manual. Together, the written safety programs and this HASP constitute the site safety plan for this site. This plan is to be used by GeoEngineers personnel on this site and must be available on-site. If the work entails potential exposures to other substances or unusual situations, additional safety and health information will be included, and the plan will need to be approved by the GeoEngineers Health and Safety Manager. All plans are to be used in conjunction with current standards and policies outlined in the GeoEngineers Health and Safety Program Manual.

1.1. Liability Clause

If requested by subcontractors, this site safety plan may be provided for informational purposes only. In this case, Form C-3 shall be signed by the subcontractor. Please be advised that this Site Safety Plan is intended for use by GeoEngineers Employees only. Nothing herein shall be construed as granting rights to GeoEngineers' subcontractors or any other contractors working on this site to use or legally rely on this Site Safety Plan. GeoEngineers specifically disclaims any responsibility for the health and safety of any person not employed by them.

1.2. General Project Information

Project Name:	Avery Landing Removal Action
Project Number:	2315-016-02
Type of Project:	Construction Observation and Compliance Sampling
Start/Completion:	Spring 2013/Fall 2013
Contractors:	Pacific Pile and Marine
Subcontractors:	TBD

2.0 BACKGROUND INFORMATION

2.1. Site Location

The Site is located in the St. Joe River Valley of the Bitterroot Mountains in northern Idaho, approximately one mile west of the town of Avery in Shoshone County. The St. Joe River borders the Site to the south and Highway 50 borders the Site to the north.

- The Site is located in the NW quarter of Section 16, Township 45 North, Range 5 East, Willamette Meridian.
- Latitude 47° 13' 57" North and Longitude W 115° 43' 40" West.

2.2. Site History

Detailed information regarding Site and operational history, previous investigations and regulatory history and cleanup actions are presented in EPA's EE/CA (E&E, 2010) and/or Supplemental Investigation Report (GeoEngineers, 2011) and are summarized in the Avery Landing Removal Action Work Plan (Work Plan; GeoEngineers, 2013).

3.0 WORK PLAN

In general, EPA's selected removal action requires the excavation of subsurface soil contaminated with petroleum hydrocarbons (diesel and heavy oil). Removal of this material is expected to significantly reduce or eliminate the source of contamination at the Site and to prevent the continued discharge of petroleum hydrocarbons and hazardous substances into the St. Joe River. The oil and hazardous substances are comingled and cannot be segregated. Residual contamination remaining at the Site is expected to attenuate by way of natural processes and the progress of the attenuation will be monitored over-time, following the completion of the removal action.

The objectives of the removal action are to:

- Remove the remaining components of the product containment, collection, and extraction systems that were installed as part of the 1994 and 2000 removal actions;
- Remove soil exceeding field screening methods within the upland and river bank areas;
- Remove, treat, and/or manage petroleum product that is present as light Non-Aqueous Phase Liquids (LNAPL) on groundwater within the excavations;
- Dispose of waste streams in accordance with CERCLA's off-site rule requirements; and
- Restore portions of the Site affected by the removal action including river bank reconstruction, backfilling, compaction, grading and re-vegetation.

The conceptual design and preliminary approach for the removal action that will be performed by Potlatch is summarized in the Work Plan.

3.1. Field Activities

The following activities are anticipated for GeoEngineers field personnel during the implantation of the Potlatch Property removal action and post-construction monitoring activities:

- Construction Observation
- Field Screening of Soil Samples
- Headspace Vapor Measurements
- Verification Soil Sample Collection
- Soil Stockpile Sample Collection
- Groundwater Treatment System Sampling

- Surface Water Quality Monitoring
- Recovery of Free Product
- Product Sample Collection
- Monitoring Well Installation
- Monitoring Well Development
- Groundwater Sample Collection

3.2. Field Personnel, Training Records, and Chain of Command

LIST OF FIELD PERSONNEL AND TRAINING

Name of Employee	Level of HAZWOPER Training (24-/40-hr)	Date of 8-Hr Refresher Training	Date of HAZWOPER Supervisor Training	First Aid/ CPR	Date of Respirator Fit Test
John Haney	40	Feb-2012	Feb-2008	Feb-2012	TBD
Robert Trahan	40	Sept-2012	June-2008	Dec-2010	Oct-2006
Abhijit Joshi	40	Oct-2012	N/A	March-2011	TBD
Scott Lathen	40	Feb-2012	N/A	Dec-2010	Feb-2011
Brian Tracy	40	Sept-2012	Feb-2008	Feb-2011	TBD
Paul Robinette	40	Apr-2012	Dec-2002	Dec-2011	Aug-2012
Garret Leque	40	Feb-2010	July-2003	Aug-2011	Feb-2010
Aaron Waggoner	40	Feb-2012	Aug-2000	Dec-2010	Oct-2011

Chain of Command	Title	Name	Telephone Numbers
1	Project Manager	John Herzog	206.239.3252
2	HAZWOPER Supervisor(s)	John Haney	509.768.5861
		Robert Trahan	206.239.3253
3	Field Engineer/Geologist(s)	Robert Trahan	206.239.3253
		Scott Lathen	509.363.3125
		Abhijit Joshi	206.239.3256
		Brian Tracy	206.679.1643
		Paul Robinette	253.278.0273
		Garrett Leque	253.312.7958
		Aaron Waggoner	253.579.2176
4	Site Safety and Health Supervisor(s)*	Robert Trahan	206.239.3253
		Scott Lathen	509.363.3125
		Abhijit Joshi	206.239.3256
		Brian Tracy	206.679.1643

Chain of Command	Title	Name	Telephone Numbers
		Paul Robinette	253.278.0273
		Garrett Leque	253.312.7958
		Aaron Waggoner	253.579.2176
5	Client Assigned Site Supervisor	Terry Cundy	208-883-1668
6	Health and Safety Program Manager	Wayne Adams	253.722.2793
N/A	Contractor	Pacific Pile and Marine	206.331.3873
N/A	Current Owner	Potlatch Land and Lumber	509.835.1500

*** Site Safety and Health Supervisor --** The individual present at a hazardous waste site responsible to the employer and who has the authority and knowledge necessary to establish the site-specific health and safety plan and verify compliance with applicable safety and health requirements. Emergency Information

Hospital Name and Address:

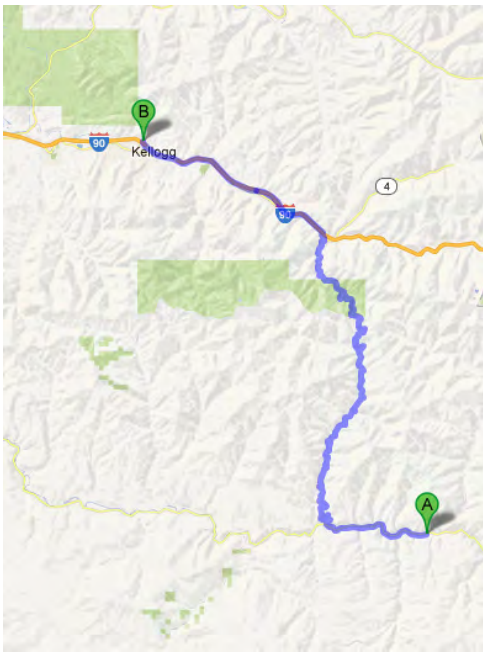
Shoshone Medical Center
25 Jackass Gulch Road
Kellogg, Idaho 83837

Phone Numbers (Hospital ER):

Phone: 208.784.1221

Distance:42 miles

Route to Hospital:



1. Head west on Milwaukee Rd Rail-Trail/NF-50/St Joe River Rd – go 5.5 miles
2. Turn right onto NF-225/Slate Creek Rd - go 14.5 mile
3. Turn right to stay on NF-225/Slate Creek Rd – go 3.1 miles
4. Continue onto Hord's Ranch Rd/NF-985 - go 2.6 miles
5. Turn left onto NF-456/Placer Creek Rd - go 3.3 miles
6. NF-456/Placer Creek Rd turns slightly right and becomes King St - go 0.4 miles
7. King St turns right and becomes Bank St – go 0.1 miles
8. Turn left onto 2nd St – go 0.2 miles
9. Turn left onto River St – go 0.3 miles

10. Continue onto N Frontage Rd – go 0.1 mile
11. Turn left to merge onto I-90 W – go 11 mile
12. Take exit 49 for Bunker Ave toward Silver Mtn. – go 0.2 mile
13. Turn right onto Bunker Ave – Destination will be on the right

Ambulance:	9-1-1
Poison Control:	(800) 732-6985
Police:	9-1-1
Fire:	9-1-1
Location of Nearest Telephone:	Cell phones are carried by field personnel.
Nearest Fire Extinguisher:	Located in the GeoEngineers vehicle on-site.
Nearest First-Aid Kit:	Located in the GeoEngineers vehicle on-site.

Additional Emergency Contact Information

- Statewide Medical Emergency Response – 208.846.7610
- Northwest Medstar (Helicopter Evacuation) – 800.422.2440

Utility Locate

- Avista Emergency Utility Line Locate – 800.227.9187
- Avista Utility Line Locate (Benewah and Shoshone Counties – 800.398.3285

Fuel/Chemical Spills

- State Response Center – 800.632.8000
- National Response Center – 800.424.8802

Forest Fires

- Idaho Department of Lands (St. Maries) – 208.245.4551
- United States Forest Service (St. Maries) – 208.245.2531

County Sheriffs (Dispatch)

- Benewah County (St. Maries) – 208.245.2555
- Shoshone County (Wallace) – 208.556.1114

3.3. Standard Emergency Procedures

Get help

- Send another worker to phone 9-1-1 (if necessary)
- As soon as feasible, notify GeoEngineers' Technical Project Manager

Reduce risk to injured person

- Turn off equipment
- Move person from injury location (if in life-threatening situation only)
- Keep person warm
- Perform CPR (if necessary)

Transport injured person to medical treatment facility (if necessary)

- By ambulance (if necessary) or vehicle
- Stay with person at medical facility
- Keep GeoEngineers manager apprised of situation and notify Human Resources Manager of situation
- As soon as feasible, notify Potlatch:
    - Terry Cundy – 208.883.1668 (O), 208.301.0410 (C)
    - Brandon Miller – 208.245.6436 (O), 208.874.7588 (C)

4.0 HAZARD ANALYSIS

This section presents hazards that may be potentially present at the Site. A hazard assessment will be completed at the Site prior to beginning field activities. Updates will be included in the daily log.

4.1. Physical Hazards

- Drill rigs (Monitoring Well Installation)
- Backhoe
- Trackhoe
- Off-Road dump truck
- Front End Loader
- Excavations/trenching (1:1 slopes for Type B soil)
- Shored/braced excavation if greater than 4 feet of depth
- Overhead hazards/power lines
- Tripping/puncture hazards (debris on-site, steep slopes or pits)
- Unusual traffic hazard – Street traffic
- Heat/Cold, Humidity
- Utilities/ utility locate

4.1.1. Safe Work Practices

- Utility checklist will be completed as required for the location to preventing drilling or digging into utilities.
- Work areas will be marked with reflective cones, barricades and/or caution tape. High-visibility vests will be worn by on-site personnel to ensure they can be seen by vehicle and equipment operators.
- Field personnel will be aware at all times of the location and motion of heavy equipment in the area of work to ensure a safe distance between personnel and the equipment. Personnel will be visible to the operator at all times and will remain out of the swing and/or direction of the equipment apparatus. Personnel will approach operating heavy equipment only when they are certain the operator has indicated that it is safe to do so through hand signal or other acceptable means.
- Heavy equipment and/or vehicles used on this site will not work within 20 feet of overhead utility lines without first ensuring that the lines are not energized. This distance may be reduced to 10 feet depending on the client and the use of a safety watch.
- Personnel entry into unshored or unsloped excavations deeper than 4 feet is not allowed. Any trenching and shoring requirements will follow guidelines established in OSHA 1926.651 Excavation Requirements.
    - In the event that a worker is required to enter an excavation deeper than 4 feet, a trench box or other acceptable shoring will be employed or the side walls of the excavation will be sloped according to the soil type and guidelines as outlined in DOSH/OSHA regulations.
    - If the shoring/sloping deviates from that outlined in OSHA, it will be designed and stamped by a PE.
    - Prior to entry, personnel will conduct air monitoring as described later in this plan.
    - All hazardous encumbrances and excavated material will be stockpiled at least 2 feet from the edge of a trench or open pit.
    - If concentrations of volatile gases accumulate within an open trench or excavation, the means of entering shall adhere to confined space entry and air monitoring procedures outlined under the air monitoring recommendations in this Plan and/or the GeoEngineers Health and Safety Program.
- Personnel will avoid tripping hazards, steep slopes, pits and other hazardous encumbrances.
    - If it becomes necessary to work within 6 feet of the edge of a pit, slope or other potentially hazardous area, appropriate fall protection measures will be implemented by the Site Safety and Health Supervisor in accordance with OSHA/DOSH regulations and the GeoEngineers Health and Safety Program.
- Cold stress control measures will be implemented according to the GeoEngineers Health and Safety Program to prevent frost nip (superficial freezing of the skin), frost bite (deep tissue freezing), or hypothermia (lowering of the core body temperature). Heated break areas and warm beverages shall be available during periods of cold weather.
- Heat stress control measures required for this site will be implemented according to GeoEngineers Health and Safety Program with water provided on-site.

4.1.2. Engineering Controls

- Trench shoring (1:1 slope for Type B Soils)
- Location work spaces upwind/wind direction monitoring
- Stockpiled soil will be covered as conditions warrant
- Site controls will be implemented to restrict access to the Site from the general public

4.2. Chemical Hazards

CHEMICAL HAZARDS AND EXPOSURES (POTENTIALLY PRESENT AT SITE)

Compound/ Description	Exposure Limits/IDLH	Exposure Routes	Symptoms/Health Effects
Diesel Fuel — liquid with a characteristic odor	None established by OSHA, but ACGIH has adopted 100 mg/m^3 for a TWA (as total hydrocarbons)	Ingestion, inhalation, skin absorption, skin and eye contact	Irritated eyes, skin, and mucous membrane; fatigue; blurred vision; dizziness; slurred speech; confusion; convulsions; headache; dermatitis
Polycyclic aromatic hydrocarbons (PAH) as coal tar pitch volatiles	PEL 0.2 mg/m^3 TLV 0.2 mg/m^3 REL 0.1 mg/m^3 IDLH 80 mg/m^3	Inhalation, ingestion, skin and/or eye contact	Dermatitis, bronchitis, potential carcinogen
PCBs (as Arochlor 1254)—colorless to pale-yellow viscous liquid with a mild, hydrocarbon odor	PEL 0.5 mg/m^3 TLV 0.5 mg/m^3 REL 0.001 mg/m^3 IDLH 5.0 mg/m^3	Inhalation (dusts or mists), skin absorption, ingestion, skin and/or eye contact	Irritated eyes, chloracne, liver damage, reproductive effects, potential carcinogen
Benzene	OSHA PEL 1 ppm Short term: 5 ppm ACGIH PEL 0.5 ppm	Inhalation, skin absorption, ingestion, skin and/or eye contact	Irritated eyes, skin, nose, respiratory system; dizziness; headache, nausea, staggered gait; anorexia, lassitude (weakness, exhaustion); dermatitis; bone marrow depression; [potential occupational carcinogen]
Xylene (m, p, o)	OSHA PEL 100 ppm NIOSH REL 100 ppm Short term: 150 ppm	Inhalation, skin absorption, ingestion, skin and/or eye contact	Irritation eyes, skin, nose, throat; dizziness, excitement, drowsiness, incoordination, staggering gait; corneal vacuolization; anorexia, nausea, vomiting, abdominal pain; dermatitis

Compound/ Description	Exposure Limits/IDLH	Exposure Routes	Symptoms/Health Effects
Trimethylbenzene (1,2,4 and 1,3,5)	NIOSH REL 25 ppm	Inhalation, skin absorption, ingestion, skin and/or eye contact	Irritation eyes, skin, nose, throat, respiratory system; bronchitis; hypochromic anemia; headache, drowsiness, lassitude (weakness, exhaustion), dizziness, nausea, incoordination; vomiting, confusion; chemical pneumonitis (aspiration liquid)
Trichloroethene	OSHA PEL 100 ppm	Inhalation, skin absorption, ingestion, skin and/or eye contact	Irritation eyes, skin; headache, visual disturbance, lassitude (weakness, exhaustion), dizziness, tremor, drowsiness, nausea, vomiting; dermatitis; cardiac arrhythmias, paresthesia; liver injury; [potential occupational carcinogen]
p-Nitroaniline	OSHA PEL 1 ppm NIOSH REL 3 mg/m^3	Inhalation, skin absorption, ingestion, skin	irritation nose, throat; cyanosis, ataxia; tachycardia, tachypnea; dyspnea (breathing difficulty); irritability; vomiting, diarrhea; convulsions; resp arrest; anemia; methemoglobinemia; jaundice
Dinitro-o-cresol	OSHA PEL 0.2 mg/m^3 NIOSH REL 0.2 mg/m^3	Inhalation, skin absorption, ingestion, skin	Sense of well-being; headache, fever, lassitude (weakness, exhaustion), profuse sweating, excess thirst, tachycardia, hyperpnea, cough, short breath, coma
Antimony	NIOSH REL: TWA 0.5 mg/m^3 OSHA PEL: TWA 0.5 mg/m^3	Inhalation, skin absorption, ingestion, skin and/or eye contact	Irritation eyes, skin, nose, throat, mouth; cough; dizziness; headache; nausea, vomiting, diarrhea; stomach cramps; insomnia; anorexia; unable to smell properly
Arsenic	NIOSH REL: 0.002 mg/m^3 (15-minute) OSHA PEL: TWA 0.010 mg/m^3	Inhalation, skin absorption, ingestion, skin and/or eye contact	Ulceration of nasal septum, dermatitis, gastrointestinal disturbances, peripheral neuropathy, resp irritation, hyperpigmentation of skin, [potential occupational carcinogen]

Compound/ Description	Exposure Limits/IDLH	Exposure Routes	Symptoms/Health Effects
Barium Chloride (as Ba)	NIOSH REL: TWA 0.5 mg/m^3 OSHA PEL: TWA 0.5 mg/m^3 Also applies to other soluble barium compounds (as Ba) except Barium sulfate.	Inhalation, ingestion, skin and/or eye contact	Irritation eyes, skin, upper respiratory system; skin burns; gastroenteritis; muscle spasm; slow pulse, extrasystoles; hypokalemia
Beryllium & beryllium compounds (as Be)	NIOSH REL: 0.0005 mg/m^3 OSHA PEL: TWA 0.002 mg/m^3 C 0.005 mg/m^3 (30 minutes), with a maximum peak of 0.025 mg/m^3	Inhalation, skin and/or eye contact	Berylliosis (chronic exposure): anorexia, weight loss, lassitude (weakness, exhaustion), chest pain, cough, clubbing of fingers, cyanosis, pulmonary insufficiency; irritation eyes; dermatitis; [potential occupational carcinogen]
Cobalt metal dust and fume (as Co)	NIOSH REL: TWA 0.05 mg/m^3 OSHA PEL: TWA 0.1 mg/m^3	Inhalation, ingestion, skin and/or eye contact	Cough, dyspnea (breathing difficulty), wheezing, decreased pulmonary function; weight loss; dermatitis; diffuse nodular fibrosis; resp hypersensitivity, asthma
Iron oxide dust and fume (as fe)	NIOSH REL: TWA 5 mg/m^3 OSHA PEL: TWA 10 mg/m^3	Inhalation	Benign pneumoconiosis with X-ray shadows indistinguishable from fibrotic pneumoconiosis (siderosis)
Lead	NIOSH REL: TWA (8-hour) 0.050 mg/m^3 OSHA PEL: TWA 0.050 mg/m^3	Inhalation, ingestion, skin and/or eye contact	lassitude (weakness, exhaustion), insomnia; facial pallor; anorexia, weight loss, malnutrition; constipation, abdominal pain, colic; anemia; gingival lead line; tremor; paralysis wrist, ankles; encephalopathy; kidney disease; irritation eyes; hypertension
Manganese Compounds	NIOSH REL: TWA 1 mg/m^3 ST 3 mg/m^3 OSHA PEL: 5 mg/m^3	Inhalation, ingestion	Manganism; asthenia, insomnia, mental confusion; metal fume fever: dry throat, cough, chest tightness, dyspnea (breathing difficulty), rales, flu-like fever; low-back pain; vomiting; malaise (vague feeling of discomfort); lassitude (weakness, exhaustion); kidney damage

Compound/ Description	Exposure Limits/IDLH	Exposure Routes	Symptoms/Health Effects
Mercury Compounds	NIOSH REL: Hg Vapor: TWA 0.05 mg/m^3 Other: C 0.1 mg/m^3 [skin] OSHA PEL: TWA 0.1 mg/m^3	Inhalation, skin absorption, ingestion, skin and/or eye contact	Irritation eyes, skin; cough, chest pain, dyspnea (breathing difficulty), bronchitis, pneumonitis; tremor, insomnia, irritability, indecision, headache, lassitude (weakness, exhaustion); stomatitis, salivation; gastrointestinal disturbance, anorexia, weight loss; proteinuria

Notes:
IDLH = immediately dangerous to life or health
OSHA = Occupational Safety and Health Administration
ACGIH = American Conference of Governmental Industrial Hygienists
mg/m3 = milligrams per cubic meter
TWA = time-weighted average (Over 8 hrs.)
PEL = permissible exposure limit
TLV = threshold limit value (over 10 hrs)
STEL = short-term exposure limit (15 min)
ppm = parts per million

4.2.1. Polycyclic Aromatic Hydrocarbons (PAHs) and Carcinogenic Polycyclic Aromatic Hydrocarbons (cPAHs)

Exposure to cPAHs can occur via inhalation of vapors, ingestion, and skin and eye contact. Skin contact can result in reddening or corrosion. Ingestion can cause nausea, vomiting, blood pressure fall, abdominal pain, convulsions and coma. Damage to the central nervous system can also occur. The U.S. Department of Health and Human Services (1989) has classified 15 PAHs compounds as having sufficient evidence for carcinogenicity, while the U.S. EPA (1990) has classified at least 5 of the identified PAHs as human carcinogens. There is no currently assigned PEL-TWA for cPAHs, but the closely related material coal tar is listed as coal tar pitch volatiles with a PEL-TWA of 0.2 mg/m3. PAHs and cPAHs as soil contaminants can be irritating to eyes and mucous membranes. PAHs are also formed during combustion and are linked to lung cancers with exposure to combustion byproducts. Lymphatic cancers are reported in the literature with PAHs in the presence of carbon black.

4.2.2. Polychlorinated Biphenyl Compounds (PCBs)

PCB is a generic term for a range of polychlorinated biphenyl compounds used commercially in heat transfer media and in the chemical/coatings industry. PCBs have been marketed commercially under the trade names Askarel® and Aroclor®, with a designation referring to the percent weight of chlorine. Prolonged skin contact with PCBs may cause acne-like symptoms, known as chloracne. Irritation to eyes, nose and throat may also occur. Acute and chronic exposure can cause liver damage, and symptoms of edema, jaundice, anorexia, nausea, abdominal pains and fatigue. If pregnant women accidentally ingest PCBs, stillbirth or infant skin and eye problems may occur. PCBs are a suspect human carcinogen. The EPA currently classifies PCBs as a Class B2, or probable, human carcinogen. The Washington State Permissible Exposure Limit (PEL)-Time Weighted Average (TWA) for PCBs with 54 percent chlorine content is 0.5

milligrams per cubic meter (mg/m^3), while the PEL-TWA for PCBs with 42 percent chlorine is 1 mg/m^3. Skin exposure may contribute significantly to uptake of these chemicals, and therefore all skin exposure to the liquid product or contaminated water, soil or dust should be strictly avoided.

4.3. Biological Hazards

Hazard	Prevention Procedure
Poison Ivy or other vegetation	Wear work gloves and long sleeve shirt
Insects or snakes	Wear work gloves and long sleeve shirt
Used hypodermic needs or other infectious hazards	Do not pick up or contact
Others: Bird droppings	Wear hard hat, gloves and long sleeve shirt

4.4. Hazards Reporting/Documentation

Update in Daily Report. Include evaluation of:

- *Physical Hazards* (excavations and shoring, equipment, traffic, tripping, heat stress, cold stress and others)
- *Chemical Hazards* (odors, spills, free product, airborne particulates and others present)
- *Biological Hazards* (snakes, spiders, other animals, discarded needles, poison ivy, pollen, bees/wasps and others present)

5.0 AIR MONITORING PLAN

AIR MONITORING, FREQUENCY, LOCATION AND ACTION LEVELS

Contaminant	Activity	Monitoring Device	Frequency of Monitoring Breathing Zone	Action Level	Action
Organic Vapors	Environmental Remedial Actions	PID	Start of shift; prior to excavation entry; every 30 to 60 minutes and in event of odors	Background to 5 ppm in breathing zone	Use Level D or Modified Level D PPE
Organic Vapors	Environmental Remedial Actions	PID	Start of shift; prior to excavation entry; every 30 to 60 minutes and in event of odors	5 to 25 ppm in breathing zone	Upgrade to Level C PPE
Organic Vapors	Environmental Remedial Actions	PID	Start of shift; prior to excavation entry; every 30 to 60 minutes	> 25 ppm in breathing zone	Stop work and evacuate the area. Contact Health and Safety Manager for guidance.

Contaminant	Activity	Monitoring Device	Frequency of Monitoring Breathing Zone	Action Level	Action
Combustible Atmosphere	Environmental Remedial Actions	PID	Start of shift; prior to excavation entry; every 30 to 60 minutes	>10% LEL or >1,000 ppm	Depends on contaminant. The PEL is usually exceeded before the lower explosive limit (LEL).
Combustible Atmosphere	Environmental Remedial Actions	PID or 4-gas meter	Start of shift; prior to excavation entry; every 30 to 60 minutes	>10% LEL or >1,000 ppm	Stop work and evacuate the site. Contact Health and Safety Manager for guidance.
Oxygen Deficient/ Enriched Atmosphere	Environmental Remedial Actions or Confined Spaces	Oxygen meter or 4-gas meter	Start of shift; prior to excavation entry; every 30 to 60 minutes	<19.5>23.5%	Continue work if inside range. If outside range, evacuate area and contact Health and Safety Manager.

- The workspace will be monitored using a photoionization detector (PID). These instruments must be properly maintained, calibrated and charged (refer to the instrument manuals for details). Zero this meter in the same relative humidity as the area in which it will be used and allow at least a 10-minute warm-up prior to zeroing. Do not zero in a contaminated area. The PID can be tuned to read chemicals specifically if there are not multiple contaminants on-site. It can be tuned to detect one chemical with the response factor entered into the equipment, but the PID picks up all volatile organic compounds (VOCs) present. The ionization potential (IP) of the chemical has to be less than the PID lamp (11.7 / 10.6eV), and the PID does not detect methane. The ppm readout on the instrument is relative to the IP of isobutylene (calibration gas), so conversion must be made in order to estimate ppm of the chemical on-site.
- An initial vapor measurement survey of the site should be conducted to detect "hot spots" if contaminated soil is exposed at the surface. Vapor measurement surveys of the workspace should be conducted at least hourly or more often if persistent petroleum-related odors are detected. Additionally, if vapor concentrations exceed 5 ppm above background continuously for a 5-minute period as measured in the breathing zone, upgrade to Level C personal protective equipment (PPE) or move to a noncontaminated area.
- Standard industrial hygiene/safety procedure is to require that action be taken to reduce worker exposure to organic vapors when vapor concentrations exceed one-half the TLV.

Because of the variety of chemicals, the PID will not indicate exposure to a specific PEL and is therefore not a preferred tool for determining worker exposure to chemicals. If odors are detected, then employees shall upgrade to respirators with Organic Vapor cartridges and will contact the Health and Safety Program Manager for other sampling options.

6.0 SITE CONTROL PLAN

Work zones will be considered to be within the delineated construction area or within 50 feet of any active construction equipment. Employees should work upwind of the machinery if possible. To the extent practicable, use the buddy system. Do not approach heavy equipment unless you are sure the operator sees you and has indicated it is safe to approach. All personnel from GeoEngineers and subcontractor(s) should be made aware of safety features during each morning's safety tailgate meeting (drill rig shutoff switch, location of fire extinguishers, cell phone numbers etc.). For medical assistance, see Section 3.0 above.

A contamination reduction zone should be established for personnel before leaving the Facility or before breaking for lunches etc. The zone should consist of garbage bags into which used PPE should be disposed. Personnel should wash hands at the Facility before eating or leaving the Facility.

6.1. Traffic or Vehicle Access Control Plans

Traffic entering and exiting the Site will be through controlled access points. Flaggers will be used as necessary to control traffic at the controlled access points. Site personnel will be instructed to stop and look both ways before crossing any vehicle access point/roadway.

6.2. Site Work Zones

Fencing (chain link, orange construction netting, silt fence or similar), Survey Tape, Traffic Cones, Posted signage and/or barricades will be used to delineate the work zone and excluding non-site personnel from entering the work zone.

- Hot zone/exclusion zone: *Within 10 feet of any boring or open excavation*
- Contamination reduction zone: Within the Site work zone greater than 10 feet of any boring or open excavation
- Decontamination Zone : Wash stations will be set up for use by Site personnel

6.3. Buddy System

Personnel on-site should use the buddy system (pairs), particularly whenever communication is restricted. If only one GeoEngineers employee is on-site, a buddy system can be arranged with subcontractor/ contractor personnel.

6.4. Site Communication Plan

Positive communications (within sight and hearing distance or via radio) should be maintained between pairs on-site, with the pair remaining in proximity to assist each other in case of emergencies. The team should prearrange hand signals or other emergency signals for

communication when voice communication becomes impaired (including cases of lack of radios or radio breakdown). In these instances, you should consider suspending work until communication can be restored. If not, the following are some examples for communication:

1. Hand gripping throat: Out of air, can't breathe.
2. Gripping partner's wrist or placing both hands around waist: Leave area immediately, no debate.
3. Hands on top of head: Need assistance.
4. Thumbs up: Okay, I'm all right: or I understand.
5. Thumbs down: No, negative.

6.5. Decontamination Procedures

Decontamination consists of removing outer protective Tyvek clothing and washing soiled boots and gloves using bucket and brush provided on-site in the contamination reduction zone. Inner gloves will then be removed, and respirator, hands and face will be washed in either a portable wash station or a bathroom facility in the support zone. Employees will perform decontamination procedures and wash prior to eating, drinking or leaving the site.

6.6. Waste Disposal or Storage

Used PPE to be placed in trash containers. Drill cuttings will be placed in on-site drums pending characterization and disposal.

7.0 PERSONAL PROTECTIVE EQUIPMENT

After the initial and/or daily hazard assessment has been completed the appropriate protective personal protective equipment (PPE) will be selected to ensure worker safety. Task-specific levels of PPE shall be reviewed with field personnel during the pre-work briefing conducted prior to the start of site operations. Task-specific levels of PPE shall be reviewed with field personnel during the pre-work briefing conducted prior to the start of site operations.

Site activities may include handling and sampling solid subsurface material (material may potentially be saturated with groundwater). Depth-to-groundwater measurements may be performed as well. Site hazards include potential exposure to hazardous materials, and physical hazards such as trips/falls, heavy equipment, and exposure.

Air monitoring will be conducted to determine the level of respiratory protection.

- Half-face combination organic vapor/high efficiency particulate air (HEPA) or P100 cartridge respirators will be available on-site to be used as necessary. P100 cartridges are to be used only if PID measurements are below the site action limit. P100 cartridges are used for protection against dust, metals and asbestos, while the combination organic vapor/HEPA cartridges are protective against both dust and vapor. Ensure that the PID or TLV will detect the chemicals of concern on-site.

- Level D PPE unless a higher level of protection is required will be worn at all times on the site. Potentially exposed personnel will wash gloves, hands, face and other pertinent items to prevent hand-to-mouth contact. This will be done prior to hand-to-mouth activities including eating, smoking, etc.
- Adequate personnel and equipment decontamination will be used to decrease potential ingestion and inhalation.

Applicable personal protection gear to be used:

- Hardhat (if overhead hazards, or client requests)
- Steel-toed boots (if crushing hazards are a potential or if client requests)
- Safety glasses (if dust, particles, or other hazards are present or client requests)
- Hearing protection (if it is difficult to carry on a conversation 3 feet away)
- Rubber boots (if wet conditions)
- Nitrile gloves

Anticipated types of gloves to be used:

- Nitrile

Anticipated protective clothing to be needed

- Cotton
- Rain gear (as needed)
- Layered warm clothing (as needed)

Anticipated inhalation hazard protection:

- Level D

7.1. Personal Protective Equipment Inspections

PPE clothing ensembles designated for use during site activities shall be selected to provide protection against known or anticipated hazards. However, no protective garment, glove or boot is entirely chemical-resistant, nor does any PPE provide protection against all types of hazards. To obtain optimum performance from PPE, site personnel shall be trained in the proper use and inspection of PPE. This training shall include the following:

- Inspect PPE before and during use for imperfect seams, non-uniform coatings, tears, poorly functioning closures or other defects. If the integrity of the PPE is compromised in any manner, proceed to the contamination reduction zone and replace the PPE.
- Inspect PPE during use for visible signs of chemical permeation such as swelling, discoloration, stiffness, brittleness, cracks, tears or other signs of punctures. If the integrity of the PPE is compromised in any manner, proceed to the contamination reduction zone and replace the PPE.

- Disposable PPE should not be reused after breaks unless it has been properly decontaminated.

7.2. Respirator Selection, Use and Maintenance

If respirators are required, Site personnel shall be trained before use on the proper use, maintenance and limitations of respirators. Additionally, they must be medically qualified to wear a respiratory protection in accordance with 29 CFR 1910.134. Site personnel who will use a tight-fitting respirator must have passed a qualitative or quantitative fit test conducted in accordance with an OSHA-accepted fit test protocol. Fit testing must be repeated annually or whenever a new type of respirator is used. Respirators will be stored in a protective container.

7.3. Respirator Cartridges

If Site personnel are required to wear air-purifying respirators, the appropriate cartridges shall be selected to protect personnel from known or anticipated site contaminants. The respirator/cartridge combination shall be certified and approved by the National Institute for Occupational Safety and Health (NIOSH). A cartridge change-out schedule shall be developed based on known site contaminants, anticipated contaminant concentrations and data supplied by the cartridge manufacturer related to the absorption capacity of the cartridge for specific contaminants. Site personnel shall be made aware of the cartridge change-out schedule prior to the initiation of site activities. Site personnel shall also be instructed to change respirator cartridges if they detect increased resistance during inhalation or detect vapor breakthrough by smell, taste or feel, although breakthrough is not an acceptable method of determining the change-out schedule.

7.4. Respirator Inspection and Cleaning

Site personnel shall inspect respirators prior to each use in accordance with the manufacturer's instructions. In addition, site personnel wearing a tight-fitting respirator shall perform a positive and negative pressure user seal check each time the respirator is donned, to ensure proper fit and function. User seal checks shall be performed in accordance with the GeoEngineers respiratory protection program or the respirator manufacturer's instructions.

8.0 ADDITIONAL ELEMENTS

8.1. Cold Stress Prevention

Working in cold environments presents many hazards to site personnel and can result in frost nip (superficial freezing of the skin), frost bite (deep tissue freezing), or hypothermia (lowering of the core body temperature).

The combination of wind and cold temperatures increases the degree of cold stress experienced by site personnel. Site personnel shall be trained on the signs and symptoms of cold-related illnesses, how the human body adapts to cold environments, and how to prevent the onset of cold-related illnesses. Heated break areas and warm beverages shall be provided during periods of cold weather.

8.2. Heat Stress Prevention

State and federal OSHA regulations provide specific requirements for handling employee exposure to heat stress. GeoEngineers' program complies with these requirements and will be implemented in all areas where heat stress is identified as a potential health issue.

General requirements for preventing heat stress apply to outdoor work environments from May 1 through September 30, annually, only when employees are exposed to outdoor heat at or above an applicable temperature listed in the following table. To determine which temperature applies to each worksite, select the temperature associated with the general type of clothing or personal protective equipment (PPE) each employee is required to wear.

Keeping workers hydrated in a hot outdoor environment requires that more water be provided than at other times of the year. GeoEngineers is prepared to supply at least one quart of drinking water per employee per hour. When employee exposure is at or above an applicable temperature listed in the following table, the Project Manager shall ensure that:

- A sufficient quantity of drinking water is readily accessible to employees at all times; and
- All employees have the opportunity to drink at least one quart of drinking water per hour.

HEAT STRESS PREVENTION

Type of Clothing	Outdoor Temperature Action Levels (Degrees Fahrenheit)
Non-breathing clothes including vapor barrier clothing or PPE such as chemical resistant suits	52°
Double-layer woven clothes including coveralls, jackets and sweatshirts	77°
All other clothing	89°

9.2 Emergency Response

- Personnel on-site should use the "buddy system" (pairs).
- Visual contact should be maintained between "pairs" on-site, with the team remaining in proximity to assist each other in case of emergencies.
- If any member of the field crew experiences any adverse exposure symptoms while on-site, the entire field crew should immediately halt work and act according to the instructions provided by the Site Safety and Health Supervisor.
- Wind indicators visible to all on-site personnel should be provided by the Site Safety and Health Supervisor to indicate possible routes for upwind escape. Alternatively, the Site Safety and Health Supervisor may ask on-site personnel to observe the wind direction periodically during site activities.
- The discovery of any condition that would suggest the existence of a situation more hazardous than anticipated should result in the evacuation of the field team, contact of the PM, and reevaluation of the hazard and the level of protection required.

- If an accident occurs, the Site Safety and Health Supervisor and the injured person are to complete, within 24 hours, an Accident Report for submittal to the PM, the Health and Safety Program Manager and Human Resources. The PM should ensure that follow-up action is taken to correct the situation that caused the accident or exposure.

9.0 MISCELLANEOUS

9.1. Personnel Medical Surveillance

GeoEngineers employees are not in a medical surveillance program because they do not fall into the category of "Employees Covered" in OSHA 1910.120(f)(2), which states a medical surveillance program is required for the following employees:

1. All employees who are or may be exposed to hazardous substances or health hazards at or above the permissible exposure limits or, if there is no permissible exposure limit, above the published exposure levels for these substances, without regard to the use of respirators, for 30 days or more a year;
2. All employees who wear a respirator for 30 days or more a year or as required by state and federal regulations;
3. All employees who are injured, become ill or develop signs or symptoms due to possible overexposure involving hazardous substances or health hazards from an emergency response or hazardous waste operation; and
4. Members of HAZMAT teams.

9.2. Spill Containment Plans (Drum and Container Handling)

Contractors or subcontractors will be responsible for developing and implanting Spill Prevention and Containment Plans for use during Site work.

9.3. Sampling, Managing and Handling Drums and Containers

Drums and containers used during the cleanup shall meet the appropriate Department of Transportation (DOT), OSHA and U.S. Environmental Protection Agency (EPA) regulations for the waste that they contain. Site operations shall be organized to minimize the amount of drum or container movement. When practicable, drums and containers shall be inspected and their integrity shall be ensured before they are moved. Unlabeled drums and containers shall be considered to contain hazardous substances and handled accordingly until the contents are positively identified and labeled. Before drums or containers are moved, all employees involved in the transfer operation shall be warned of the potential hazards associated with the contents.

Drums or containers and suitable quantities of proper absorbent shall be kept available and used where spills, leaks or rupture may occur. Where major spills may occur, a spill containment program shall be implemented to contain and isolate the entire volume of the hazardous substance being transferred. Fire extinguishing equipment shall be on hand and ready for use to control incipient fires.

9.4. Entry Procedures for Tanks or Vaults (Confined Spaces)

GeoEngineers employees shall not enter confined spaces to perform work unless they have been properly trained and with hands-on experience in the use of retrieval equipment. If a project requires confined space entry, please include a copy of the confined space permit and include the training documentation in this HASP.

Trenches greater than 4 feet in depth with the potential for buildup of a hazardous atmosphere are considered confined spaces.

9.5. Sanitation

Washrooms will be available for use during Site work.

9.6. Lighting

Site activities will be conducted during daylight hours. Artificial lighting will be used as necessary if work is conducted after daylight hours.

9.7. Excavation, Trenching and Shoring

All employees working on project sites where there is an excavation greater than 4 feet in depth shall be trained in excavation safety and shall utilize safe procedures. OSHA designates a 5-foot depth for instituting excavation safety procedures; however GeoEngineers will use the more conservative depth of 4 feet as specified by states such as Washington, Oregon and California. This program is for the protection of employees while working in excavations; however, employees should not enter excavations if there is an alternative.

GeoEngineers employees often do not have stop work authority on projects controlled by other contractors. However, any GeoEngineers employee, regardless of job title, working in the field will be responsible for contacting the Project Manager if they observe practices on the job site that are serious safety violations that are not under their control. They will document the unsafe practices and will contact the site safety coordinator as identified by the client. If no one is on-site, the Project Manager, once notified, will contact the client. This action establishes GeoEngineers' commitment to site health and safety on all job sites as our duty of care to the public, contractors and clients.

GeoEngineers is responsible for its subcontractors and will also be providing inspections and corrections of any work that subcontractors perform around excavations.

10.0 DOCUMENTATION TO BE COMPLETED FOR HAZWOPER PROJECTS

The following forms are required for Hazardous Waste Operations and Emergency Response (HAZWOPER) projects:

- Field Log
- Health and Safety Plan acknowledgment by GeoEngineers employees (Form C-2)
- Contractors Health and Safety Plan Disclaimer (Form C-3)

- Conditional forms available at GeoEngineers office: Accident Report

The Field Report is to contain the following information:

- Updates on hazard assessments, field decisions, conversations with subcontractors, client or other parties, etc.;
- Air monitoring/calibration results, including: personnel, locations monitored, activity at the time of monitoring, etc.;
- Actions taken;
- Action level for upgrading PPE and rationale; and
- Meteorological conditions (temperature, wind direction, wind speed, humidity, rain, snow, etc.).

11.0 LIMITATIONS

Any electronic form, facsimile or hard copy of the original document (email, text, table, and/or figure), if provided, and any attachments are only a copy of the original document. The original document is stored by GeoEngineers, Inc. and will serve as the official document of record.

12.0 REFERENCES

E & E (Ecology and Environment, Inc.), "Draft Final Engineering Evaluation /Cost Analysis, Avery Landing Site, Avery, Idaho," prepared for the United States Environmental Protection Agency, Region 10, dated December 2010.

GeoEngineers, Inc., "Draft Removal Action Work Plan, Avery Landing Site, Avery, Idaho" GEI File No. 2315-016-02, prepared for United States Environmental Protection Agency on Behalf of the Potlatch Corporation, dated March 4, 2013.

GeoEngineers, Inc., "Supplemental Site Investigation, Avery Landing Site, Avery, Idaho," GEI File No. 2315-016-01, prepared for Potlatch Forest Holdings, Inc., dated November 9, 2011.

Golder Associates, Inc., (Golder), "Final Engineering Evaluation /Cost Analysis Work Plan for the Avery Landing Site, Avery, Idaho," prepared for the Potlatch Forest Products Corporation, dated January 23, 2009.

FORM C-1
HEALTH AND SAFETY PRE-ENTRY BRIEFING
AVERY LANDING REMOVAL ACTION
FILE NO. 2315-016-02

Inform employees, contractors and subcontractors or their representatives about:

- The nature, level and degree of exposure to hazardous substances they're likely to encounter;
- All site-related emergency response procedures; and
- Any identified potential fire, explosion, health, safety or other hazards.

Conduct briefings for employees, contractors and subcontractors, or their representatives as follows:

- A pre-entry briefing before any site activity is started; and
- Additional briefings, as needed, to make sure that the Site-specific HASP is followed.

Make sure all employees working on the Site are informed of any risks identified and trained on how to protect themselves and other workers against the Site hazards and risks

Update all information to reflect current sight activities and hazards.

All personnel participating in this project must receive initial health and safety orientation. Thereafter, brief tailgate safety meetings will be held as deemed necessary by the Site Safety and Health Supervisor.

The orientation and the tailgate safety meetings shall include a discussion of emergency response, Site communications and site hazards.

Company Employee

Date	Topics	Attendee	Name	Initials

FORM C-2
SITE SAFETY PLAN – GEOENGINEERS' EMPLOYEE ACKNOWLEDGMENT
Avery Landing Removal Action
File No. 2315-016-02

All GeoEngineers' Site workers shall complete this form, which should remain attached to the Safety Plan and filed with other project documentation.

I hereby verify that a copy of the current Safety Plan has been provided by GeoEngineers, Inc., for my review and personal use. I have read the document completely and acknowledge an understanding of the safety procedures and protocol for my responsibilities on Site. I agree to comply with all required, specified safety regulations and procedures.

Print Name	Signature	Date

FORM C-3
SUBCONTRACTOR AND SITE VISITOR SITE SAFETY FORM
AVERY LANDING REMOVAL ACTION
FILE NO. 2315-016-02

I verify that a copy of the current Site Safety Plan has been provided by GeoEngineers, Inc. to inform me of the hazardous substances on Site and to provide safety procedures and protocols that will be used by GeoEngineers' staff at the Site. By signing below, I agree that the safety of my employees is the responsibility of the undersigned company.

Print Name	Signature	Firm	Date

APPENDIX E
Contingency Plan

Contingency Plan

Avery Landing Site
Avery, Idaho

for
U.S. Environmental Protection Agency on Behalf of Potlatch Land and Lumber

March 4, 2013

GeoEngineers

Plaza 600 Building
600 Stewart Street, Suite 1700
Seattle, WA 98101
206.728.2674

Contingency Plan

Avery Landing Site
Avery, Idaho

File No. 2315-016-02

March 4, 2013

Approvals:

Signature: _____ Date: _____

John M. Herzog, PhD, Principal, GeoEngineers

Signature: _____ Date: _____

Robert S. Trahan, Environmental Geologist, GeoEngineers

Signature: _____ Date: _____

Mark J. Lybeer, Quality Assurance Leader, GeoEngineers

Signature: _____ Date: _____

Earl Liverman, Federal On-Scene Coordinator, EPA

RST:JMH:csv

GeoEngineers

Table of Contents

1.0 INTRODUCTION

This Contingency Plan has been prepared to describe the measures that will be considered and taken in the case of an emergency and to prevent and, if necessary, contain and clean up oil spills or hazardous waste spills that may occur during construction of the Avery Landing Removal Action. The purpose of this Contingency Plan is to establish procedures that will be utilized in the event of an emergency and establish procedures, methods and equipment to prevent the release of oil or hazardous materials to water bodies or upland areas during construction. This plan has been prepared based on project information available at the time it was prepared.

This Plan has been developed to provide the project staff with information and resources to respond in the case of an emergency and to prevent and respond to spills related to construction activities. The Plan recognizes that each spill likely presents a unique event requiring individual evaluation and response. This Plan therefore is intended to be utilized as a general guidance document. In the event of a spill, actions taken will be appropriate to the specific situation.

1.1. Project Personnel and Roles

The Avery Landing Removal Action will be performed by Potlatch Land and Lumber (Potlatch) and their contractors under oversight by the US Environmental Protection Agency (EPA). Pacific Pile and Marine (Cleanup contractor for Potlatch) will be responsible for the implementation of the removal action construction, improving/maintaining access roads, implantation and monitoring of Best Management Practices (BMPs), and spill prevention and control. GeoEngineers (environmental engineer for Potlatch) will be responsible for providing on-Site technical assistance, engineering support and for field-screening, collecting analytical samples, and documenting the removal action. Key personnel for the Avery Landing removal action are summarized in the following table.

Project Role	**Name** **Organization**	**Telephone** **Email** **Address**
Regulatory Project Manager/ On-Scene Coordinator	Earl Liverman EPA	208.664.4858 Liverman.earl@epamail.epa.gov Coeur d'Alene Field Office 1910 Northwest Boulevard, Suite 208 Coeur d'Alene, Idaho 83814
Potlatch Project Manager	Terry Cundy Potlatch	208-301-0410 Terry.Cundy@potlatchcorp.com 530 S. Asbury, Suite 4 Moscow, Idaho 83843
Technical Project Manager	John Herzog GeoEngineers	206.406.6431 jherzog@geoengineers.com 600 Stewart Street, Suite 1700 Seattle, Washington 98101

Project Role	Name Organization	Telephone Email Address
Task Manager/Field Coordinator	Robert Trahan GeoEngineers	206.239.3253 rtrahan@geoengineers.com 600 Stewart Street, Suite 1700 Seattle, Washington 98101
Construction Foreman	Craig Cearley Pacific Pile and Marine	206.909.1798 craigc@pacificpile.com 582 S Riverside Drive Seattle, WA 98108

1.2. Physical Description and Site Contact Information

Site Name	Avery Landing Site
Site Location	The Site is located approximately one mile west of Avery, Idaho, on the north side of the St. Joe River. The site is located in the NW quarter of Section 16, Township 45 North, Range 5 East, Willamette Meridian, and is located at latitude 47° 13' 57'' North and longitude is 115° 43' 40'' West.
Property Size	Approximately 6 acres
Regulatory Site Contact	Earl Liverman, EPA On-Scene Coordinator
Nearest Residents	The eastern portion of the Site includes the Bentcik property, a seasonally occupied residence.
Primary Land Uses Surrounding the Site	North: Highway 50 ("St. Joe River Road"), owned by the Federal Highway Administration (FHA). South: St. Joe River (rural/recreational) East: Rural/recreational West: Rural/recreational

1.3. Schedule of Work

Removal action activities being performed by Potlatch will be completed summer/fall of 2013. Post-removal action groundwater monitoring will be performed following completion of the removal action construction as approved by EPA. A schedule for mobilization/demobilization, sampling activities and reporting are presented in the Avery Landing Removal Action Work Plan (Work Plan; GeoEngineers, 2013).

1.4. Historical and Background Information

Detailed information regarding Site and operational history, previous investigations and regulatory history and cleanup actions are presented in EPA's EE/CA (E&E, 2010) and/or Supplemental Investigation Report (GeoEngineers, 2011) and are summarized in the Work Plan.

1.5. Project Description

In general, EPA's selected removal action requires the excavation of subsurface soil contaminated with petroleum hydrocarbons (diesel and heavy oil). Removal of this material is expected to significantly reduce or eliminate the source of contamination at the Site and to prevent the continued discharge of petroleum hydrocarbons and hazardous substances into the St. Joe River. The oil and hazardous substances are comingled and cannot be segregated. Residual contamination remaining at the Site is expected to attenuate by way of natural processes and the progress of the attenuation will be monitored over-time, following the completion of the removal action.

The objectives of the removal action are to:

- Remove the remaining components of the product containment, collection, and extraction systems that were installed as part of the 1994 and 2000 removal actions;
- Remove soil exceeding field screening methods within the upland and river bank areas;
- Remove, treat, and/or manage petroleum product that is present as light Non-Aqueous Phase Liquids (LNAPL) on groundwater within the excavations;
- Dispose of waste streams in accordance with CERCLA's off-site rule requirements; and
- Restore portions of the Site affected by the removal action including river bank reconstruction, backfilling, compaction, grading and re-vegetation.

The conceptual design and preliminary approach for the removal action that will be performed by Potlatch is summarized in the Work Plan.

1.6. Coordination With Local and Federal Agencies

Potlatch and their contractors will coordinate with local law enforcement, Shoshone County and the United States Forest Service (USFS) during the implementation of this removal action. Contact information for these agencies is listed below:

- Shoshone County Planning Department– 208.752.8891
- USFS Avery Ranger District – 208.245.4517
- Shoshone County Sheriff Office – 208.556.1114
- Shoshone County Fire Department – 208.784.1188

Local law enforcement (Shoshone County Sheriff), Shoshone County and the USFS will be notified of the planned construction dates and the types, quantity and frequency of haul trucks that will be expected to be traveling to and from the Site in accordance with the Public Outreach Plan, included as Appendix F of the Work Plan.

2.0 HEALTH AND SAFETY

Construction activities will be completed in general accordance with the requirements of the Federal Occupational Safety and Health Act (29 CFR 1910, 1926). These regulations include requirements that workers are to be protected from exposure to contaminants.

A Health and Safety Plan (HASP) describing actions that will be taken to protect the health and safety of GeoEngineers personnel is provided in Appendix D of the Work Plan. The cleanup contractor for Potlatch will prepare a separate HASP for use by contractor personnel.

3.0 CONSTRUCTION CONTINGENCY

3.1. Construction Site and Equipment

As part of Site preparation, access roads, construction staging areas, contaminated soil staging pads, water treatment area, and temporary facilities will be constructed to support the removal action. Construction of access roads and staging pads may require limited grading and placement of a geotextile and/or gravel on the graded surface. The actual locations of the temporary access roads, staging areas, equipment pads, temporary construction facilities (travel trailer, water treatment system, temporary utilities, etc.) and vehicle loading zones will be determined in the field prior to the start of the contaminated material soil excavation. Temporary staging, water detention and other facilities will be located in areas that will not interfere with construction operations or vehicle traffic.

Construction equipment expected to be used on-site is expected to include at least the following:

- Excavator(s);
- Off-road hauling trucks;
- Rollers;
- Fueling trucks;
- Water trucks; and
- Support vehicles.

3.2. Spill Planning and Prevention

3.2.1. Training

All employees working for the cleanup contractor will have received training on the proper procedures for Spill Response Containment, CPR/First Aid, 40 hour Hazardous Waste Operations training in accordance with 29 CFR 1910.120 with annual 8 hour refresher training, Trenching and Excavation Competent Person Training and Confined Space Entry Training (if conditions warrant).

3.2.2. Spill Response Materials and Equipment

Spill prevention kits will be stored at designated locations such as fueling and hazardous material storage areas at the Site. Spill prevention kits Spill Kits will, at a minimum, the following:

- Spill response procedures sheet;
- Oil absorbent pads;
- Water-based absorbent pads;
- Plastic sheeting;
- 5-gallons of loose absorbent material (i.e., kitty litter, floor sweep or similar);
- Heavy duty garbage bags;
- Shovel;
- Broom; and
- Spill report form.

Supplies used will be replaced to protect the integrity of spill response efforts at the Site. All personnel will be informed on the location of the spill prevention kits prior to the start of work.

3.2.3. Inspections and Security

The cleanup contractor will conduct daily visual inspections at the Site. Inspections for leaks, corrosions, or damage that could lead to a discharge of oil or other hazardous material will include an examination of all on-site fuel storage tanks, construction equipment, fire protection equipment and spill response equipment.

Security measures will be implemented on-site to prevent unauthorized access to fuel storage, material storage and excavation areas. Temporary fencing, barricades, signage and/or traffic control flaggers will be used, as necessary, to control access to the Site both during working and non-working hours. As part of the construction mobilization, the cleanup contractor for Potlatch will be responsible for installing fencing and/or other means to restrict general public access to work areas (i.e., construction staging, materials management and excavation water detention areas) at the Site. Site access control will be maintained for the duration of the project.

3.2.3.1. CONSTRUCTION STAGING AREA

The staging area will be inspected daily for any spills or leaks. A spill resulting from equipment leaks including fuel tanks, equipment seals, or hydraulic lines will be immediately contained by using a spill pan or spill pad placed beneath the leak source. An undetected leak from parked equipment will, at minimum, be contained within the equipment staging area by a temporary berm.

3.2.3.2. FUELING STORAGE AREA

A fueling area will be designated for all refueling on the Site. This fueling area will be located in an upland area at least 100 feet away from the St. Joe River. All fuel tanks will be stored within a secondary containment, preferably enclosed or covered. The proper equipment will be used to transfer fuel. Spill response equipment and fire extinguishers will be stored in a readily accessible location known by all construction personnel.

During non-working hours, flow and drain valves for fuel tanks will be securely locked in the closed position. Additionally, construction equipment used during the removal action will be securely locked to prevent unauthorized use.

The fueling area will be inspected daily for any spills or leaks. A spill during fueling operations will be contained and cleaned up immediately. The transfer of fuel into portable equipment will be performed using a funnel and/or hand pump, and a spill pad used to absorb any incidental spills/drips.

3.2.3.3. SOIL STOCKPILE AREA

Stockpile areas will be inspected daily. Any material lost as a result of wind, rain, erosion or overfilling of contaminated staging pads will be contained and cleaned up.

3.2.3.4. WATER TREATMENT AREA

The water treatment system (i.e., pipes, hoses, connection points, etc.) will be inspected daily for leaks. Observed leaks will be immediately contained by using a spill pan or temporary berm to prevent erosion and potential release of hazardous substances to the ground surface.

3.2.3.5. TEMPORARY HAUL ROADS

Temporary haul roads will be utilized during the removal action to transport equipment or materials during the removal action will be inspected daily. Incidental spills (e.g., fuel or oil leaks) from hauling equipment operating on the haul roads will be contained and cleaned.

3.2.4. Secondary Containment

Material handling and storage will be located in designated areas. Secondary containment will be used to contain any spills that could occur in these areas. Secondary containment is a safeguarding method used to prevent unplanned releases of toxic or hazardous compounds into uncontrolled work areas. Examples are the use of spill pallets, berms, or containment walls. The choice of secondary containment for the material handling and storage areas will be decided after consultation with the construction contractor.

3.3. Spill Response

3.3.1. Spill Response Procedures

Any site worker that observes a leak or spill will immediately respond to the situation by first attempting to stop the source of the leak or spill and turn off any ignition sources in the area. The employee will then alert personnel in the area of the spill and restrict access as needed and contact the on-site safety coordinator. On-site personnel, equipment, and materials will be mobilized to clean up the spill.

If a spill or release cannot be controlled or injuries have occurred due to the release the following procedures should be followed:

- Summon help and alert others in the vicinity of the release.
- Evacuate immediate area, and provide care to anyone injured. Call 9-1-1 and follow the emergency procedures specified in the HASP. Note that a land based telephone line may be required if cell phone coverage is determined to be unreliable.
- If potential fire or explosion hazards exist initiate evacuation procedures. Call 9-1-1.
- Respond defensively to any uncontrolled spill.

- Use appropriate personal protective equipment when responding to any spill, as described in the HASP.
- Protect drains and/or surface water (river) by use of absorbent, booms and/or drain covers.
- Notify the on-site safety coordinator.
- Notify other trained staff to assist with the spill response and cleanup activities.
- Coordinate response activities with local emergency personnel (fire department), if necessary.
- Be prepared to provide MSDS information to fire department, EMT, hospital or physician, if necessary.
- Notify appropriate agency if a release has entered the environment. Refer to spill notification requirements specified in Section 3.4.

3.3.2. Spill Containment/Cleanup – Upland Areas

In the event of a spill or release to the ground, cleanup operations will begin as soon as possible maximize the recovery amount of the spilled material and to minimize potential environmental impacts. General procedures for ground spills are:

1. **Stop the spill** – The leak or spill should be stopped by turn off nozzles or valves from the leaking container or shutting off the construction equipment, if it can be done safely. Use a wooden plug, bolt, band or putty on a puncture-type hole if possible.
2. **Contain and recover the spill** – If the spill or leak cannot be stopped, catch the flowing liquid using a pan, pail, hubcap, shovel or whatever is available. Spreading sorbent material, such as kitty litter, sand, straw, sawdust, wood chips, peat, sorbent pads, or dirt can stop the flow and soak up the petroleum.
3. **Collect the contaminated sorbent** – Brooms and shovels can be used to pick up the sorbent material and put it into buckets, garbage cans or barrels, on top of plastic sheeting or in steel drums. Fresh granular sorbent such as sand can then be re-spread on a roadway to control the residual slipperiness.
4. **Secure the waste** – Contaminated material generated by the spill will be contained on Site pending disposal at a facility permitted to receive the waste.

Spills that occur in upland areas of the Site will be cleaned up immediately and in compliance with state and federal laws and regulations. Materials supplied closest to the spill location will be used to contain the spill and divert any material from entering the nearby water bodies. Spilled material and contaminated soils will be collected and placed in labeled and sealed drums or stockpiled and secured pending off Site permitted disposal. All affected areas, equipment, and surfaces that have contacted the spilled material will be decontaminated. The waste generated in cleaning up the spill will be disposed of in accordance with the applicable state and federal regulations.

Spills that occur off of the Site during transport of contaminated materials are the responsibility of the transport company. The transport company will notify the appropriate authorities and Potlatch in the event that contaminated material generated from the Site is released. Potlatch will require

the transporter to provide documentation that the spilled material has been cleaned up in compliance with applicable Federal, State and local regulations.

3.3.3. Spill Containment/Cleanup – In-Water Areas

In the event of a spill or release to the St. Joe River, cleanup operations will begin as soon as possible to maximize the recovery amount of the spilled material and to minimize potential environmental impacts. General procedures for water spills are:

1. **Stop the spill** – The leak or spill should be stopped by turn off nozzles or valves from the leaking container or shutting off the construction equipment, if it can be done safely. Use a wooden plug, bolt, band or putty on a puncture-type hole if possible.
2. **Contain and recover the spill** – Oil containment booms and/or absorbent materials downstream of the spill source will be deployed to contain the spill.
3. **Collect the contaminated sorbent** – Recovery of any liquid spill material into water is to be initiated immediately with, skimmers, skimming pumps and/or absorbent materials.
4. **Secure the waste** – Recovered product will be transferred to the on Site water treatment system to be processed.

If necessary, an Emergency Response Contractor may be called to contain and clean up the spill. The National Response Center and the State of Idaho Communication Center will also be notified of the incident. All affected areas, equipment, and surfaces that have contacted the spilled material will be decontaminated. The waste generated in cleaning up the spill will be disposed of in accordance with the applicable state and federal regulations.

3.4. Spill Notification

Spills or releases of hazardous substances into the environment may require notification to one or more Federal or State agencies. The release reporting requirements are dependent on the substance release, the location of the release, and the time period when the release occurred.

- Spills of petroleum products, which cause sheen on the waters of the US, or exceed 25 gallons, will be considered a reportable spill.
- Spills of hazardous materials or of hazardous waste, which exceed their reportable quantities, are a reportable spill.
- The person discovering the spill should report the release immediately to the cleanup contractor foreman. The foremen will gather information that is immediately available on the release and inform the environmental contractor, Potlatch and federal on-scene coordinator.

Spills of oil in harmful quantities must be reported to state and federal agencies. A harmful quantity is any quantity of discharged oil that violates state water quality standards, causes a film or sheen on the water's surface, or leaves sludge or emulsion beneath the surface. Phone numbers for reporting a discharge to the National Response Center and other federal and state agencies are provided below.

Spill Notification Contacts:

- National Response Center (NRC) – 800.424.8802
- EPA Region 10 24-Hour Spill Reporting Number – 206.553.1263
- Idaho Communication Center – 800.632.8000

If any doubt exists on the report-ability of the release, the release will be reported.

4.0 EMERGENCY RESPONSE PLAN

The HASP, which will be located on-site for the duration of the project, includes directions to the nearest hospital and should be the primary reference for emergency procedures during any emergency.

4.1. Emergency Contacts

Cell phones will be carried by all Site personnel, however if cell phone coverage is not available at the Site, the contractor will have access to a land-based phone, and the location of the land-based phone will be known by all employees.

Emergency Contacts	
Ambulance/Police/Fire	9.1.1
Statewide Medical Emergency Response	208.846.7610
Northwest Medstar (Helicopter Evacuation)	800.422.2440
Shoshone Medical Center	208.784.1221
Avista Emergency Utility Line Locate	800.227.9187
Avista Utility Line Locate (Benewah and Shoshone Counties	800.398.3285
State Response Center	800.632.8000
National Response Center (NRC)	800.424.8802
EPA Region 10 24-Hour Spill Reporting Number	206.553.1263
Idaho Communication Center	800.632.8000
Idaho Department of Lands (St. Maries)	208.245.4551
United States Forest Service (St. Maries	208.245.2531
Benewah County (St. Maries)	208.245.2555
Shoshone County (Wallace)	208.556.1114
Poison Control	800.732.6985

4.2. Injury/Accident Emergency Procedures

Get help -

- Send another worker to call 9-1-1 (if necessary).

- As soon as feasible, notify Potlatch Project Manager.

Reduce risk to injured person -

- Turn off equipment.
- Move person from injury location (if in life-threatening situation only).
- Keep person warm.
- Perform CPR (if necessary).

Transport injured person to medical treatment facility (if necessary) -

- By ambulance (if necessary) or contractor vehicle.
- Stay with person at medical facility. The nearest hospital is located in Wallace, ID and a map to the nearest hospital is included in the HASP presented in Appendix D of the Work Plan.

4.3. Fire Emergency Procedures

- Notify all personnel within the immediate area of the fire.
- Evacuate the area in the event the fire cannot be extinguished safely.
- Go directly to the closest telephone and contact the Fire Department by calling 9-1-1.
- Notify the on-site safety coordinator.

4.4. Accidental Disruption of Utilities

Prior to starting work actions will be taken to locate utilities at the Site. The following provides the procedure for the accidental disruption of utilities.

- Notify all personnel within the immediate vicinity, shut down all equipment.
- If the accidental release of natural gas is caused by contact with an underground utility, evacuate the area if the release of gas cannot be secured safely.
- Notification of on-site safety coordinator immediately.
- On-site safety coordinator will contact Potlatch and will take appropriate actions including, but not limited to, contacting the appropriate utilities and/or Shoshone County.

5.0 LIMITATIONS

We have prepared this Site Specific Sampling Plan for use by the Potlatch Land and Lumber during the removal action at the Avery Landing Site. Within the limitations of scope, schedule and budget, our services have been executed in accordance with generally accepted environmental science practices in this area at the time this report was prepared. No warranty or other conditions expressed or implied should be understood.

Any electronic form, facsimile or hard copy of the original document (email, text, table, and/or figure), if provided, and any attachments are only a copy of the original document. The original document is stored by GeoEngineers, Inc. and will serve as the official document of record.

6.0 REFERENCES

E & E (Ecology and Environment, Inc.), "Draft Final Engineering Evaluation /Cost Analysis, Avery Landing Site, Avery, Idaho," prepared for the United States Environmental Protection Agency, Region 10, dated December 2010.

GeoEngineers, Inc., "Draft Removal Action Work Plan, Avery Landing Site, Avery, Idaho" prepared for United States Environmental Protection Agency on Behalf of the Potlatch Land and Lumber, dated March 4, 2013.

GeoEngineers, Inc., "Supplemental Site Investigation, Avery Landing Site, Avery, Idaho," GEI File No. 2315-016-01, prepared for Potlatch Forest Holdings, Inc., dated November 9, 2011.

APPENDIX F
Community Outreach Plan

Community Outreach Plan

Avery Landing Site
Avery, Idaho

for
U.S. Environmental Protection Agency on Behalf of Potlatch Land and Lumber

March 4, 2013

GeoEngineers

Plaza 600 Building
600 Stewart Street, Suite 1700
Seattle, WA 98101
206.728.2674

Community Outreach Plan

Avery Landing Site
Avery, Idaho

File No. 2315-016-02

March 4, 2013

Approvals:

Signature: _____ Date: _____

Terry Cundy, Project Manager, Potlatch

Signature: _____ Date: _____

John M. Herzog, PhD, Principal, GeoEngineers

Signature: _____ Date: _____

Robert S. Trahan, Environmental Geologist, GeoEngineers

Signature: _____ Date: _____

Earl Liverman, Federal On-Scene Coordinator, EPA

TC:RST:JMH:csv

GeoEngineers

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LIST OF FIGURES

1.0 INTRODUCTION

This document presents the Community Outreach Plan (COP) to facilitate two-way communication between the community surrounding the Avery Landing Site (Site) and Potlatch Land and Lumber (Potlatch) to ensure that residents are informed of the planned removal action that will be completed at the Site and are provided opportunities to ask questions regarding the project.

This Community Outreach Plan addresses Avery Landing's relationship to the community (Section 2.0), provides a background of the community (Section 3.0), presents Potlatch's Community Outreach Program (Section 4.0), and provides a listing of resources available (Section 5.0).

2.0 BACKGROUND INFORMATION

2.1. Site History

The Site was used as a switching and maintenance facility for the Chicago, Milwaukee, St. Paul, and Pacific Railroad (CMSPR) from 1907 to 1977. Activities performed by the railroad at the facility included maintenance, refueling, and cleaning. On-site structures included a switchyard with train roundhouse and turntable, engine houses, and railroad maintenance and machine shops. As a refueling station, fuel oil was stored on-site, including the use of a 500,000-gallon above ground fuel oil tank.

Today, there is little remaining at the site to indicate its previous use, except concrete foundation slabs and remnants of rail lines. The eastern portion of the site is owned by Mr. Larry Bentcik, and is used on a seasonal basis. The western portion of the site is owned by Potlatch. Potlatch performed leveling and grading of the Site and reportedly used the area for temporary log storage. Potlatch also leased portions of the site to third parties for a variety of uses including log storage, parking, and trailer sites.

2.2. Site Description/Location

The Site is located in the St. Joe River valley in the Bitterroot Mountains in northern Idaho, approximately one mile west of the town of Avery, Shoshone County, Idaho (Figure 1). The Site is located directly adjacent to the St. Joe River to the south and Highway 50 to the north, at latitude 47°13'57" North and longitude 115°43'40" West.

The St. Joe River is designated a special resource water that is used for wild life habitat, recreation, and as drinking water for downstream residents. According to the Idaho Administrative Procedures Act (IDAPA) 58.01.02.110.11, the segment of the St. Joe River adjacent to the Site that could be impacted by contaminants found at the Site has the following designations: special resource water, domestic water supply, primary contact recreation, cold water communities, and salmonid spawning. The Site is located in a narrow and remote river valley, and the immediate area around the Site is residential, recreational, and commercial.

2.3. Previous Cleanup Actions and Investigations

The earliest known release of petroleum product associated with railroad operations into the St. Joe River was reported in the 1940's and observations of free petroleum product entering the river continued through 2012.

Two prior cleanup actions have been conducted at the Site. A free product recovery system was operated by Potlatch from 1994 through 2000, and recovery of 1,290 gallons of petroleum from groundwater was reported for this period. In 2000, Potlatch installed a containment wall and collections wells to prevent free product from flowing into the St. Joe River and a series of product extraction wells were installed at the Site.

The Site has been under investigation since the late 1980s. Most recently, EPA conducted a removal assessment at the Site during April 2007 (E&E, 2007). During this investigation, petroleum product was observed floating on groundwater in monitoring and recovery wells. Sampling completed as part of this investigation confirmed that contamination was also present in subsurface soils and groundwater. Additionally, free product was also observed seeping into the St. Joe River along approximately 200 feet of river bank.

In August 2008, the EPA entered into an agreement with Potlatch to perform an Engineering Evaluation and Cost Analysis (EE/CA), Biological Assessment (BA) and a Cultural Resources Evaluation (CRE) for Site. The EE/CA (E&E, 2010) evaluated environmental data, presented alternatives for cleaning up the contamination, and recommended a preferred cleanup alternative. The BA (E&E, 2011) evaluated how any cleanup action would affect threatened or endangered species, such as bull trout, and critical habitat. The CRE (AAR, 2010 and AAR, 2012) evaluated and documented any railroad remnants of historic importance.

During the summer and fall of 2009, Potlatch conducted an investigation (Golder, 2010) to gather additional soil, sediment, surface water, and groundwater data to better understand the nature and extent of contamination and to provide a framework for preparation of the draft EE/CA report.

The various investigations demonstrate that the elevated concentrations of hazardous substances and total petroleum hydrocarbons indicate that air (inhalation), direct contact (dermal), and soil (ingestion) human exposure pathways exist. Nearby residents, recreationists, and/or trespassers could be exposed to the contaminants. The potential for exposure is elevated further because Site access is unrestricted and limited vegetative cover may result in the redistribution of contaminants throughout the surrounding environment. Moreover, there exists Site-related chronic petroleum product releases to the St. Joe River and shoreline. Additionally, ecological receptors, including avian, mammalian, and plant receptors, could become exposed to elevated site contaminants and petroleum product found in soils through direct contact with the contaminated materials and with water and sediments contaminated by the materials; ingestion of soils, water, and sediments contaminated by the materials; and ingestion of contaminated food (e.g., sediment- or soil-dwelling insects, vegetation).

3.0 COMMUNITY BACKGROUND

3.1. Community Profile

Avery is a small unincorporated town set in the St. Joe River Valley in Shoshone County, Idaho. Avery is located in the middle of the St. Joe District of the Idaho Panhandle National Forest. Avery is a popular tourist attraction in northern Idaho for its beautiful wilderness and outdoor recreation. Common activities include camping, hunting, ATV riding, snowmobiling, hiking, horseback riding, mountain biking, fishing, and rafting. Avery has a population of about 57 permanent residents. The temporary population is much higher in the summer though due to seasonal workers for the United States Forest Service and the many summer homes in Avery and along the St. Joe River.

3.2. History of Community Outreach

On Monday, April 16, 2007, Judy Smith, EPA Community Involvement Coordinator made a visit to Avery and spoke with twelve people in the following locations:

- Avery Post Office
- Avery Gift Shop - Sheffy's General Store and Motel
- The Avery Trading Post
- Idaho Fly Fishing Company Store
- Avery School District #394 (K-8)
- Swiftwater Motel & RV Park
- US Forest Service, St. Joe Ranger District

On November 18th, Jeff Philip, EPA Community Involvement Coordinator conducted community interviews with six residents in the Avery Trading Post.

Potlatch has conducted no independent interviews.

3.3. Key Community Concerns

The community members EPA spoke with were very concerned about the economy. They wondered what was going on at the site from a curiosity perspective, but did not express concern about it. They were interested in any jobs created by the cleanup.

3.4. Response to Community Concerns

Potlatch will encourage the contractor conducting the cleanup to use local resources as appropriate and to provide open communication with the public on the cleanup project.

3.5. Summary of Communication Needs

The following is a summary of communication needs for the Avery Landing removal action:

- Enter on-going dialogue with adjacent landowner (Larry Bentcik) as project planning and implementation proceed;

- Conduct meetings (and field reviews as appropriate) with Avery and Shoshone County public works personnel to address potential issues on infrastructure and public safety;
- Conduct an open public meeting in Avery to introduce Potlatch personnel, cleanup contractor and explain 2013 summer project; and
- Provide contact information to citizens.

3.6. Potlatch's Community Outreach Program

The overall goal of Potlatch's Community Outreach Program is to promote communication between citizens and Potlatch in the cleanup process. Potlatch will implement the community outreach activities described below.

3.7. Outreach Plan

Information will be distributed in the following ways:

- Potlatch will conduct meetings with county and city public works personnel, and law enforcement personnel to address infrastructure (road, sewer, water, power, telephone, etc.) and public safety concerns.
- Potlatch will conduct an open public meeting in Avery to introduce Potlatch personnel, the cleanup contractor, and the engineering contractor, and explain the 2013 summer project.
- At the public meeting, written contact information will be provided.
- Conduct on-site meetings as appropriate before mobilization.
- Post contact information on-site in a location readily available to the public. The sign will be posted as mobilization occurs and temporary construction infrastructure is established.

Opportunities for community input:

- The Site will be occupied at all times during the project by at least one of: construction contractor, engineering contractor, or Potlatch personnel.
- The contractors and Potlatch personnel may be contacted directly by phone or email.

3.8. Time Frame Summary for Community Outreach Activities

ACTIVITY	TIME FRAME
Discuss progress with Larry Bentcik	Started February 18, 2013 (on-going)
Meet with city of Avery public works.	March 21, 2013
Meet with Shoshone County public works and law enforcement.	March 21, 2013
Conduct public meeting.	March 29, 2013
Conduct on site meetings as needed.	May 31, 2013
Place contact information (below) on a sign readily available to the public.	June 15, 2013

ACTIVITY	TIME FRAME
Revise the Community Outreach Plan	As needed

4.0 CONTACT INFORMATION

4.1. Removal Action

Name Organization	Project Role	Telephone Email Address
Terry Cundy Potlatch	Potlatch Project Manager	Tel: 208.883.1668 Cell: 208.301.0410 Email: Terry.Cundy@potlatchcorp.com 530 S. Asbury, Suite 4 Moscow, Idaho 83843
Brandon Miller Potlatch	St Joe District Forester	Tel: 208.245.6436 Cell: 208.874.7588 Email: Brandon.Miller@potlatchcorp.com 1100 Railroad Ave Box 386 St. Maries, ID 83861
John Herzog GeoEngineers	Technical Project Manager	Tel: 206.728.2674 Cell: 206.406.6431 Email: jherzog@geoengineers.com 600 Stewart Street, Suite 1700 Seattle, Washington 98101
Will Clark Pacific Pile and Marine	Construction Project Manager	Tel: 206.331.3873 Cell: 206.300.1312 Email: wilc@pacificpile.com 582 South Riverside Drive Seattle, WA 98108
Earl Liverman U.S. EPA, Region 10	Federal On-Scene Coordinator	Tel: 208.664.4858 Fax: 208.664.5829 Email: Liverman.earl@epamail.epa.gov 1910 Northwest Boulevard, Suite 208 Coeur d'Alene, Idaho 83814

4.2. Local, State and Federal Officals

- Superintendent's Office Avery School District 394: 370 Old River Rd, Avery - 208.245.2479
- Postmaster General: 10 Depot Road, Avery - 208.245.3557

- Governor: C.L. "Butch" Otter
- Federal Senators: Mike Crapo & James E. Risch
- Representatives: Raul Labrador (ID 1st District)
- Idaho DEQ (Director): Curt Fransen

4.3. Media

- Newspapers:
    - St. Maries Gazette Record
    - Shoshone News Press - Kellogg, ID www.shoshonenewspress.com

5.0 REFERENCES

Applied Archeological Research, Inc. (AAR), "Results of a Cultural Resources Survey of the Avery Landing Rail Yard Project Area, Shoshone County, Idaho," prepared for Ecology and Environment, Inc., dated July 20, 2012.

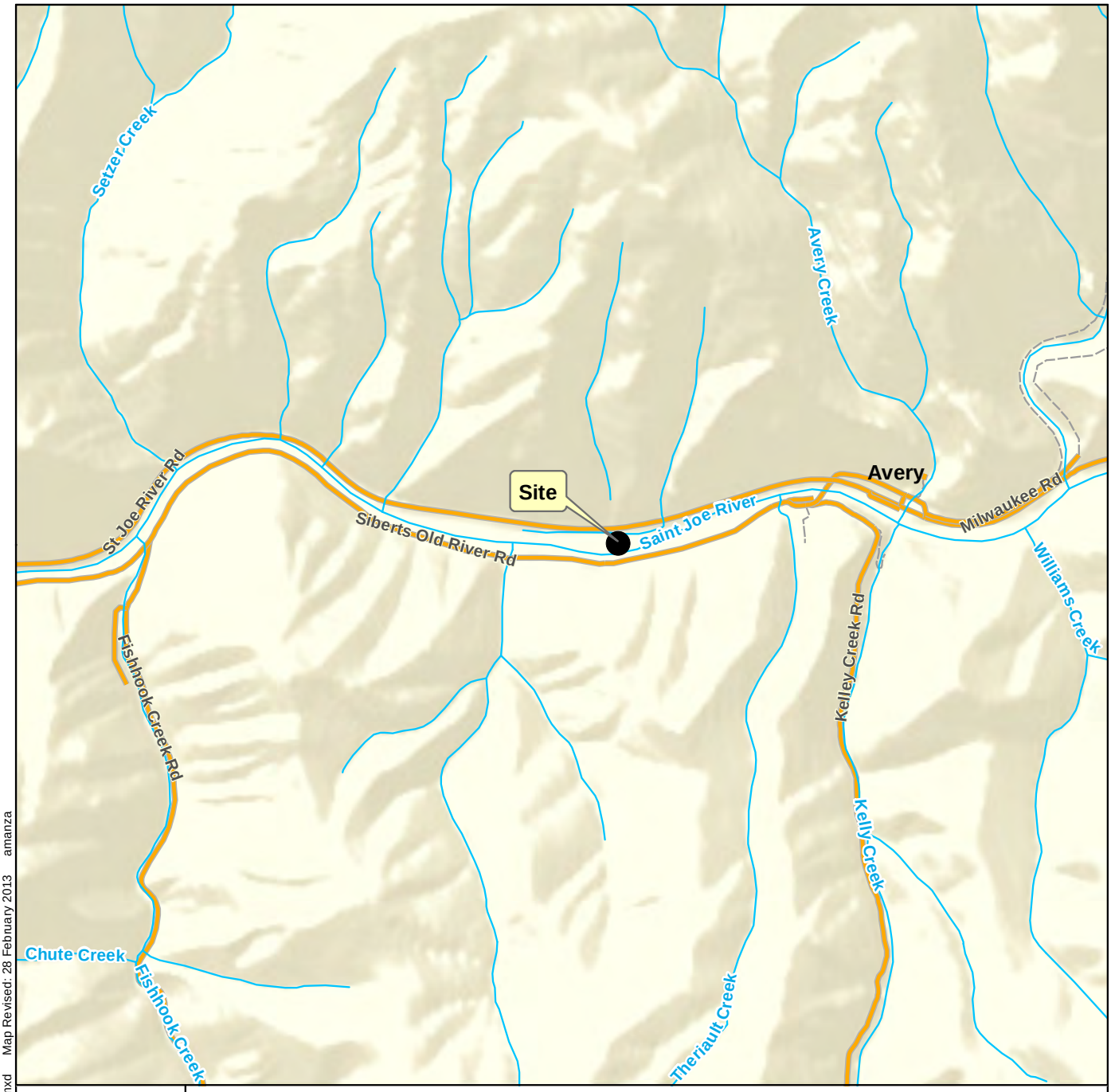
Applied Archeological Research, Inc. (AAR), "Results of a Class I Inventory of the Avery Landing Project Area, Shoshone County, Idaho," prepared for Ecology and Environment, Inc., dated December 23, 2010.

Ecology and Environment, Inc. (E& E), "Biological Assessment, Avery Landing Site Removal Action, Avery, Shoshone County, Idaho," prepared for the United States Environmental Protection Agency, Region 10, dated June 21, 2011.

Ecology and Environment, Inc. (E& E), "Draft Final Engineering Evaluation /Cost Analysis, Avery Landing Site, Avery, Idaho," prepared for the United States Environmental Protection Agency, Region 10, dated December 2010.

Ecology and Environment, Inc. (E& E), "Removal Assessment Report, Avery Landing Site, Avery, Idaho", prepared for the United States Environmental Protection Agency, Seattle, Washington, dated July 31, 2007.

Golder Associates, Inc. (Golder), "Engineering Evaluation/Cost Analysis, Avery Landing Site, Avery, Idaho", prepared for Potlatch Land and Lumber, LLC, dated January 22, 2010.



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Feet

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Data Sources: ESRI Data & Maps

Projection: NAD 1983 UTM Zone 11N

Path: \\seaProjects\2231501\6\GIS\231501602_VicinityMap_PublicOutreach.mxd Map Revised: 28 February 2013 amanza

Vicinity Map

Avery Landing Site
Avery, Idaho

GeoEngineers

Figure F-1